

Substance abuse among the disabled . . .

Some researchers contend adults with severe physical disabilities are especially vulnerable to alcohol and drug abuse because of low self-esteem, social isolation and other problems related to their physical condition.

But a survey of wheelchair-bound college students finds they use alcohol and illicit drugs at about the same overall rate as the general college population. Nearly one in five impaired students is ranked as a "problem user" of alcohol and other drugs, according to a report in the just-released *ALCOHOL HEALTH & RESEARCH WORLD* (Vol. 13, No. 2). About one in three reported episodes of physical illness following alcohol or illicit drug use, probably caused by harmful interactions with prescription drugs, say Dennis Moore and Harvey Siegal of Wright State University in Dayton, Ohio.

Moore and Siegal administered extensive questionnaires to 57 physically impaired students attending a large midwestern university. About 40 percent reported drinking alcohol one or more times per week, and 14 percent said they smoke marijuana one or more times per week, rates comparable to those of the general college population. The students reported using other illicit drugs much less often than marijuana.

As with young adults in general, drug use among disabled college students is closely associated with a previous history of drug use, frequent sexual activity and a tendency toward thrill seeking.

Eleven disabled students were problem users, reporting five or more serious or recurring symptoms of drug abuse. These include repeatedly attending classes while "high" or intoxicated, suffering injuries while under the influence, blacking out after drug use and experiencing withdrawal symptoms. Nine problem users had been disabled in accidents, and eight of those reported using alcohol or drugs at the time of their injury.

Seventeen of the disabled students take three or more prescription drugs, the researchers say, and 20 report periods of physical illness following alcohol or illicit drug use.

. . . and among young schizophrenics

A study of young adults with schizophrenia and related psychotic disorders who participate in an intensive community support program reveals pervasive alcohol and illicit drug use. Of 72 patients randomly assigned to the program, 37 are rated by staff or themselves as using alcohol, marijuana or other illicit drugs several times a week or more. Among these "significant users," alcohol ranks as the most frequently used drug, report social worker Mary Ann Test of the University of Wisconsin-Madison and her colleagues in the fall *SCHIZOPHRENIA BULLETIN*.

Individuals in the community program average 30 years of age. Most live independently in apartments and meet with counselors once or twice a week. They also participate in daily group activities.

"Significant users" have ingested drugs on a regular or heavy basis since around age 18. Most currently use at least two substances (which may include alcohol), and a large majority are heavy consumers of caffeine and cigarettes as well. A surprisingly high number of the significant users — 13 — are women, the researchers note.

The most commonly cited reasons for substance use are to reduce anxiety, have something to do with friends, relieve boredom and make it easier to sleep.

Significant users are still able, with the help of the community support program, to live in the community and participate in group and work activities. But drug use may be even greater and more disruptive among young schizophrenics who receive little guidance or social support, Test and her colleagues suggest.

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Second megaplume found in Pacific

While making routine measurements off the coast of Washington state two years ago, oceanographer Edward T. Baker and his colleagues found what they were hoping for: the second example of an intriguing phenomenon called a megaplume. A year earlier, in the same general area above the Juan de Fuca undersea ridge, Baker's group had discovered an extremely large "cloud" of slightly warmed water measuring some 20 kilometers in diameter and 700 meters in thickness (SN: 10/10/87, p.238). In the July 10 *JOURNAL OF GEOPHYSICAL RESEARCH*, the group describes its second megaplume find. And in the Sept. 10 issue of the same journal, British researchers attempt to explain how megaplumes form.

Baker and his colleagues at the Pacific Marine Environmental Laboratory in Seattle report that the new megaplume was about half the size of the first. Like the first, it carried concentrations of dissolved minerals and gases, and the temperature in its core was about one-quarter degree centigrade above the ambient sea temperature. The researchers discovered the second plume only 45 km from where they spotted the first one, but they say it is unlikely the two plumes are the same. Currents should have carried the first one much farther away in the 13 months separating the sightings, and minerals within the second plume indicate it formed only about a month before its discovery, Baker says.

The Juan de Fuca ridge has hydrothermal vents that spew out jets of mineral-laden, 350°C water in a fairly continuous stream. Scientists believe the megaplumes also come from fields of these vents. But the megaplumes represent an explosion of fluids, like a giant underwater burp.

J.R. Cann and M.R. Strens of the University of Newcastle upon Tyne in England propose two scenarios for megaplume formation. In one, they envision plate tectonic forces fracturing the crust around the vents, providing a wider-than-normal passageway through which a large volume of hot water could escape into the ocean. Yet Cann and Strens favor a second theory, which they say better explains how vents could spew out a megaplume and then return to normal. They suggest that volcanic activity in the crust might pump excess heat or gas into the reservoir of hydrothermal fluids that feeds the vents. Pressure on the hot fluids would build until they broke through the partially clogged vent holes and surged into the ocean. Once the reservoir of hot water drained upward, the vents would clog up again and the flow would return to normal. The researchers say they must wait for more megaplume discoveries to test these hypotheses.

Drilling into Earth's icy past

It seems appropriate that investigators travel to the top of Greenland's ice cap to gather clues about Earth's glacial ages. U.S. and European scientists recently finished their first of four field seasons, drilling a pair of unprecedented research holes into Greenland's ice cap. The two teams are extracting cores of ice containing particles and air bubbles dating back over 200,000 years. Like a tree, the ice cap grows in annual layers. This enables scientists to trace a year-by-year history of climate change through the last two ice ages by analyzing the particles and gases locked within the annual layers.

The U.S. team, led by Paul A. Mayewski of the University of New Hampshire in Durham, is drilling a 3,200-meter-deep hole about 30 kilometers from the ice cap's summit, the site of the European drilling. The two teams will compare findings.

The cores will reach back through the last ice age, which began about 120,000 years ago, into the warm interglacial time, and then back into the previous ice age. Meanwhile, Soviets continue to drill the Vostok hole into the Antarctic ice sheet — a hole that presently reaches back more than 160,000 years.

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