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Central Institute of Mental Health (CIMH): Drinking during puberty increases the risk of later alcohol problems

Puberty, the time period during which sexual maturity is achieved, is a very critical developmental period due to ongoing neurodevelopmental processes in the brain. It is exactly during this period that substances like alcohol may induce the most destructive and also persistent effects on the still developing brain, which may in some cases even result in neuropsychiatric disorders, such addictive disorders. A new study at the CIMH, funded by the German Research Foundation (DFG), examined the influence of puberty on initiation of drinking. The research shows that individuals who have their first drink during puberty subsequently have higher drinking levels than do individuals with a post-pubertal drinking onset.

“Most teenagers have their first alcoholic drink during puberty. However, most research on the risks of early-onset alcohol use up to now has not focused on the pubertal stage during which the first alcoholic drink is consumed,” said Miriam Schneider, corresponding author for the study and leader of the Research Group Developmental Neuropsychopharmacology at the CIMH. The study revealed a peak risk of alcohol use disorders for youth beginning to drink alcohol at 12 to 14 years of age, while even earlier beginners seemed to have a slightly lower risk. “Common thinking in alcohol research was that the earlier adolescents begin, the more deleterious become their drinking habits. However, since timing of puberty is not a simple function of chronological age, and also greatly differs between the sexes, the pubertal phase at first drink may therefore represent a stronger and better indicator for subsequent alcohol-related problems than simply the age”, said Schneider.

The crucial point is that adolescents have their first drink at very different ages, so this variable required a longitudinal epidemiological study and experimental animal research to assess drinking behavior. Also, the determination of the pubertal stage at the age at first drink (AFD) is very complex, therefore the study of Schneider and her team had to rely on estimations. Furthermore, it took longitudinal studies to assess drinking data in early adulthood. Finally, both drinking behavior and pubertal development could be traced back to common factors such as psychosocial adversity. Schneider points out that, while puberty and adolescence are overlapping time periods, with puberty being a part of adolescence, the terms cannot be used interchangeably. Whereas ‘puberty’ refers to the time period during which sexual maturity is achieved (girls ~ 10-14, boys ~ 12-17), ‘adolescence’ on the other hand refers to the gradual period of behavioral and cognitive transition from childhood to adulthood, where adult behavioral abilities are acquired, and the boundaries of this period are not precisely defined. Therefore, for the study it had to be taken into consideration that girls complete puberty much earlier than boys, indicating a difference in timing of neurodevelopmental processes.

Schneider and her colleagues determined pubertal age at first drink in 283 young adults (152 females and 131 males) that were part of a larger epidemiological study. In addition, the participants' drinking behavior – number of drinking days, amount of alcohol consumed, and hazardous drinking – was assessed at ages 19, 22, and 23 years via interviews and questionnaires. Furthermore, a rodent study concurrently examined the effects of mid-puberty or adult alcohol exposure on voluntary alcohol consumption in later life.

"This study indicates that the period of puberty might serve as a risk window for the initiation of alcohol use. Results also show a higher Alcohol Use Disorders Identification Test (AUDIT) score later in life in those individuals who had their first drink during puberty. A higher AUDIT score is indicative of a high likelihood of hazardous or harmful alcohol consumption. This information is of great relevance for intervention programs", said Rainer Spanagel, head of the Institute of Psychopharmacology at the Central Institute of Mental Health.

The results of the study will be published in the October 2013 issue of *Alcoholism: Clinical & Experimental Research* (ACER), the official journal of the Research Society on Alcoholism and the International Society for Biomedical Research on Alcoholism.

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