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Original Article

Association between parental and offspring's alcohol use – population data from India

Anita Chopra, MSc, Anju Dhawan, MD, Hem Sethi, MSc, Devinder Mohan, MD

Address for Correspondence: Ms. Anita Chopra, Scientist, National Drug Dependence Treatment Centre, All India Institute of Medical Sciences, New Delhi. Email: a_chopra02@hotmail.com

ABSTRACT

Aim: Authors investigated the association between alcohol use of parents and offspring in data derived from a district based household survey on drug abuse. **Methods**: Data on 4411 fathers paired with 6884 offspring were available. Alcohol use disorders were diagnosed based on DSM-III-R criteria. Analyses was conducted to contrast 1979 offspring of alcohol using fathers (AU+ [n=1246]) with 4885 offspring of non alcohol using fathers (AU− [n=3170]). **Results**: 10% of offspring of AU+ fathers used alcohol compared to 3.7% offspring of AU- fathers. The offspring of AU+ fathers had higher odds for alcohol use (OR= 2.9, 95% CI=2.4 –3.6) and tobacco use (OR= 1.5, 95% CI=1.3–1.8) (past 30 days) compared to offspring of AU- fathers. Offspring of AU+ fathers were significantly younger and less educated than offspring of AU- fathers. **Conclusions:** Offspring of alcohol using fathers are a risk group for alcohol use. There is a need for interventions that address parent alcohol use to mitigate the risk for alcohol use in male offspring.

Keywords: ***Offspring-parent, alcohol use, patterns of consumption; population level data***

INTRODUCTION

Alcohol use and disorders are a major public health problem.[1-4] Factors that place individuals at an increased risk for alcohol use include gender, race, peer influences, psychopathology, personality, alcohol expectancies, and genetic factors.[5-13]A positive family history has been studied as a robust early marker of alcohol use,[14-15] but with an over-reliance on college based samples.[16]

Parental alcoholism influences the child.[17] Studies on genetic epidemiology (family, twin, adoption, half-sibs) suggest that alcoholism in a biological parent is a consistent predictor of alcoholism in the offspring.[18-20] Children of alcohol using parents are known to begin drinking early even when they are raised separately from each other and from the biological parents.[21,22] Specifically, paternal alcoholism has been associated with increased rates in both sons and daughters. [23]

Little data are available from India on the association between parental and offspring alcohol use.[24] The present communication addresses this issue in a representative general population sample for which diagnostic information on alcohol use disorders was available.

METHODS

Sample: The data are from a district based representative general population survey conducted in Thrissur district, Kerala in 2001-2002 to determine the prevalence of use of tobacco, alcohol and other substances. The survey used a multistage sampling technique. In the first stage, primary sampling units (PSUs: urban areas/villages) were selected from the district with probability proportional to size. In the second stage, these PSUs were randomly selected from each Block with equal probability. Systematic random sampling with equal probability was then adopted to draw the households to be surveyed. Information on all family members above the age of 10 years in a household was obtained. The final sample

consisted of 43952 participants of whom 20456 were males from 12731 households. A total of 4411 fathers were paired with their 6864 male offspring for this report.

***Assessment*:** Trained interviewers obtained information on alcohol use by father and the offspring use of tobacco, alcohol, and other drugs through face to face interviews. The questionnaire was pre-coded and obtained information on socio-demographic variables and substance use (e.g. use in past one month, frequency of use, amount usually consumed in a sitting). The term 'use' referred to current active use. Diagnoses were based on the DSM-III-R criteria for alcohol abuse and dependence.

Data analysis: To identify an eligible parent–offspring pair, living in same household, each male was coded as father or offspring. Then based on the presence /absence of current alcohol (AU+) or no alcohol use (AU-) among their fathers, each offspring was coded as child of alcohol user or child of non-alcohol user.

RESULTS

The mean age of fathers was 57.4±11.4 years, 95.5% of them were living with their spouse; 46.6% had completed 5-8 years of schooling and 57.1% were currently employed. Among a total of 6864 offspring, 1979 were offspring of alcohol using fathers (AU+, n=1246) and 4885 offspring of non alcohol using fathers (AU−, n=3170). Among the offspring of alcohol users, 198 (10.0%) reported consuming alcohol and 217 (10.9%) reported consuming tobacco. A chi-square test-of-independence showed a significant association between parental and offspring alcohol use ($\chi 2=107.1$, df=1, $p<.0001$) and parental alcohol use and offspring tobacco use ($\chi 2=22.4$, df=1, $p<0.0001$). Offspring of AU+ father had about three times (OR=2.9) higher risk of alcohol use and one and half times (OR=1.5) higher risk of tobacco use than offspring of AU- father (Table 1).

Table 1: Distribution of offspring according to alcohol use status of father

	AU+ father	**AU- father**	**Odds Ratio (Confidence Interval)**
Alcohol Use in offspring No alcohol use in offspring	198 (10.0) 1781 (90.0)	179 (3.7) 4706 (96.3)	OR=2.9 (2.3-3.6)
Tobacco Use in offspring No tobacco use in offspring	217 (10.9) 1762 (89.1)	362 (7.4) 4523 (92.6)	OR= 1.5 (1.3–1.8)

Table 2: Family resemblance (father-offspring dyads) data on alcohol consumption

		Father (N=1246)	Male offspring (N=198)	Chi-square, degrees of freedom, probability
Type of alcohol	Only beer Only spirits Both bees & spirits	233 (18.6) 830 (66.7) 183 (14.7)	27 (13.6) 146 (73.7) 25 (12.6)	$\chi 2=4.5$, df=2, NS
Frequency of beer	Monthly Weekly Daily	209 (50.1) 114 (27.4) 93 (22.4)	32 (61.5) 11 (21.2) 9 (17.3)	$\chi 2=2.4$, df=2, NS
Quantity of beer	28.4 grams 52.0 grams >52 grams Not known	140 (36.6) 197 (51.2) 47 (12.3) 32	33 (63.4) 13 (25.0) 6 (11.5)	$\chi 2=14.9$, df=2, $p<.01$
Frequency of spirits	Monthly Weekly Daily	579 (57.2) 236 (23.3) 198 (19.6)	118 (69.1) 36 (21.0) 17 (9.9)	$\chi 2=11.2$, df=2, $p<.01$
Quantity of spirits	37.5 grams 75.0 grams >75 grams Not known	808 (81.7) 144 (14.6) 36 (3.6) 25	136 (79.6) 29 (17.0) 6 (3.6)	$\chi 2=.64$, df=2, NS
Type of use	Dependent Not-dependent	282 (22.6) 964 (77.4)	37 (18.6) 161 (81.3)	$\chi 2=1.3$, df=1, NS

NS: Non significant

Table 2 presents family resemblance (father-son dyads) data on patterns of alcohol use. Offspring drank significantly lesser quantities of beer per sitting compared to their fathers ($\chi 2=14.9$, df=2, $p<.01$); also a higher proportion of fathers (19.6%) were daily drinkers (of spirits) compared to their sons (9.9%) ($\chi 2=11.2$, df=2, $p<.01$).

A comparison of alcohol using offspring of AU+ and AU- fathers showed that alcohol using offspring of the AU+ fathers were significantly younger (mean ± standard deviation: 31.9±6.2 years, 34.1±7.0 years, t=-3.2, p=0.0014) and less educated ($\chi 2=12.9$,df=4, $p<.05$) than the offspring of AU- fathers. There was no significant difference in pattern of alcohol and tobacco use in the two groups (data not shown).

DISCUSSION

The secondary analysis of general population survey data from Thrissur district confirmed the association between alcohol use by father and their male offspring. The prevalence of alcohol use was significantly higher (10%) among offspring of AU+ compared to those of AU- fathers (3.0%), as suggested by previous literature.[25-27] The likelihood of alcohol use by male offspring of AU+ as compared to AU- fathers (3 folds) in the present sample was lower than that in population based studies from United States (4-10 folds);[28-29] and a college based study from north India (6 folds).[30] Geographical, sampling and temporal issues may explain these differences. Kerala has the highest per capita consumption of alcohol among Indian states (8.3 liters),[31] probably due to easy access to Indian made foreign liquor (IMFL), high production of home brews (toddy - from coconut trees), a ban on arrack, and low stigma associated with alcohol use.[32-34] The association between alcohol use in parents and children has been explained based on social learning theory (modelling of parental drinking behaviour and associated values);[35] and genetic factors[13]

Offspring drank significantly lesser quantities of beer per sitting compared to their fathers, and a higher proportion of fathers were daily drinkers (of spirits) compared to their sons. This is likely due to the fact that the sons were assessed early in their drinking histories. Alcohol using offspring of the AU+ fathers were significantly younger and less educated than the offspring of AU- fathers, probably due to an early onset of drinking among them as suggested by earlier studies.[35-38] However, the above explanation has to be moderated in light of the fact that Kerala has a lower legal minimum age limit for alcohol consumption in India (18 years) compared to other states of India (mode: 25 years); and has witnessed a secular time-trend towards lower age of initiation of alcohol use (from 19 years in 1986 to 13.5 years in 2006).[39] Significant differences in educational attainment between sons of AU+ and AU- fathers has been reported in another community based study from India.[40]

Unlike in previous studies,[14] there was no tendency towards heavier, more frequent or dependent use of alcohol in the sons of AU+ fathers in the present dataset. Easy availability of alcohol, which is the key environmental risk factor for alcohol use could possibly explain this negative finding.[41-42]

The study has a few limitations. It is a cross-sectional study, so the data only allow for interpretations regarding associations rather than prediction. The present analysis did not account for many pertinent predictors of alcohol use, e.g. family stressors (illness, divorce) or co-morbidity; as these data were not available. Also, effects based on levels of alcohol use by fathers were not analyzed.

Decreasing the proportion of children using alcohol and delaying the age of onset of alcohol use are important goals for alcohol use policy.[43] In India, the prevalence of alcohol use has been increased in recent years and a younger age of onset has been reported. Since children of alcoholic fathers are at particularly high risk for developing drinking problems, these offspring deserve more attention in prevention efforts.[44-45] Substance use prevention programs should reinforce non-use by parents. For offspring, intervention programs should

include two approaches: 1) prevention of/delay in initiation of use and alcohol dependence and 2) prevention of the development of psychosocial problems. Parents should be educated about the effects of alcohol use on children. Therapeutic self-help groups such as 'Alateen' that function for children of alcohol users in the West, can be initiated in the Indian setting. Following proactive family management practices, children of alcohol users should also receive early screening and intervention, for which the pass through points and intervention venues can be emergency department, primary health care settings, and treatment centers.[46]

Further, longitudinal studies to understand factors influencing alcohol use among offspring, like development of drinking behaviors over time, and parent-child relationship issues (family environment, family interaction pattern, behavioral problems in children) need to be mounted.[47,48]

REFERENCES

1. Helzer JE, Pryzbeck TR. The occurrence of alcoholism with other psychiatric disorders in the general population and its impact on treatment. J Stud Alcohol 1988 ; 49 :2l9-224.
2. Kessler R, Crum R, Warner L, Nelson C, Schulenberg J, Anthony J. Lifetime co-occurrence of DSM-III-R alcohol abuse and dependence with other psychiatric disorders in National Comorbidity survey. Arch Gen Psychiatry 1997 ; 54 : 313-321.
3. Mohan D, Chopra A, Ray R, Sethi, H. Alcohol consumption in India: a cross sectional study. In: Room R, Demers A, Bourgault C (Eds). Surveys of Drinking Patterns and Problems in Seven Developing Countries. Geneva: World Health Organization, 2004. Pp. 103–114.
4. Ray R. The Extent, Pattern and Trends of Drug Abuse in India - National Survey. New Delhi: Ministry of Social Justice and Empowerment and United Nations International Drug Control Programme, 2004.
5. Schulte MT, Ramo D, Brown SA. Gender differences in factors influencing alcohol use and drinking progression among adolescents. Clin Psychol Rev 2009; 29:535-547.
6. Chassin L, Curran PJ, Hussong AM, Colder CR. The relation of parent alcoholism to adolescent substance use: A longitudinal follow-up study. J Abnorm Psychol 1996; 105:70-80.
7. Barnow S, Schultz G, Lucht M, Ulrich, I, Preuss, UW, Freyberger HJ. Do alcohol expectancies and peer delinquency/substance use mediate the relationship between impulsivity and drinking behaviour in adolescence? Alcohol Alcohol 2004; 39:213-219.
8. Sher KJ, Walitzer KS, Wood PK, Brent EE. Characteristics of children of alcoholics: putative risk factors, substance use and abuse and psychopathology. J Abnorm Psychol 1991; 100: 427-448.
9. Whipple S, Noble E. Personality characteristics of alcoholic fathers and their sons. J Stud Alcohol 1991; S2: 331-337.
10. Narang RL, Gupta R, Mishra BP, Mahajan R. Temperamental characteristics and psychopathology among children of alcoholics. Indian J Psychiatry 1997; 39:226-231.
11. Shen S, Locke-Wellman J, Hill, SY. Adolescent alcohol expectancies in offspring from families at high risk for developing alcoholism. J Stud Alcohol 2001; 62:763-772.
12. Liu IC, Blacker DL, Ronghui Xu, Fitzmaurice G, Lyons MJ, Tsuang MT. Genetic and environmental contributions to the development of alcohol dependence in male twins. Arch Gen Psychiatry 2004; 61:897-903.
13. Schuckit MA. An overview of genetic influences in alcoholism. J Subst Abuse Treat 2009; 36:S5-14.
14. Chalder M, Elgar FJ, Bennett P. Drinking and motivations to drink among adolescent children of parents with alcohol problems. Alcohol Alcohol 2006; 41:107-113.
15. Gruber EN, Celan J, Golik-Gruber V, Agius M, Murphy S. The relationship between having smoking or drinking parents and the occurrence of smoking or drinking in their adolescent children. Alcohol Alcohol 2007; 43:25-35.
16. Rangarajan S. Mediators and moderators of parental alcoholism effects on offspring self-esteem. Alcohol Alcohol 2008; 43:481-491.
17. Obot I, Wagner F, Anthony J. Early onset and recent drug use among children of parents with alcohol problems: data from a national epidemiologic survey. Drug Alcohol Depend 2001; 65:1-8.
18. Kaprio J, Koskenvuo M, Langinvainio H, Romanov K, Sarna S, Rose RJ. Genetic influences on use and abuse of alcohol: A study of 5638 adult Finnish twin brothers. Alcohol Clin Exp Res 1987; 11:349-356
19. Cloninger CR, Bohman M, Sigvardsson S. Inheritance of alcohol abuse: cross-fostering analysis of adopted men. Arch Gen Psychiatry 1981; 38:861-867.

20. Lieb R, Merikangas KR, Höfler M, Pfister H, Isensee B, Wittchen H-U. Parental alcohol use disorder in offspring: a community study. Psychol Med 2002; 32: 63–78.
21. Pollock VE, Schnieder LS, Gabrielli WF. Sex of parent and offspring in the transmission of alcoholism: A meta-analysis. J Nerv Ment Dis 1987; 175: 668-673.
22. Chassin L, Pitts SC, DeLucia C, Todd M. A longitudinal study of alcoholics: predicting young adult substance use disorders, anxiety, and depression. J Abnorm Psychol 1999; 108:106-119.
23. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders: 3rd Ed. Rev. Washington DC: APA.
24. Sher KJ, Walitzer KS, Wood PK. Characteristics of children of alcoholics: putative risk factors, substance use and abuse and psychopathology. J Abnorm Psychol 1991; 100: 427-448.
25. Chassin L, Barrera M. Substance use escalation and substance use restraint among adolescent children of alcoholics. Psychol Addict Behav 1993; 7:3-20.
26. Schuckit MA, Smith TL. 8-year follow-up of 450 sons of alcohol and control subjects. Arch Gen Psychiatry 1996; 53:202-210.
27. Russell M. Prevalence of alcoholism among children of alcoholics. In: Windle M, Searles JS (Eds). Children of Alcoholics: Critical Perspectives. New York: Guilford, 1990. Pp. 9-38.
28. U.S. Department of Health and Human Services' Substance Abuse and Mental Health Services Administration (SAMHSA). Children of Alcoholics. Community Action Guide, 1987. http:// download.ncadi.samhsa.gov/prevline/ pdfs/ms939.pdf.
29. Khosla V, Thankappan KR, Mini GK, Sarma PS. Prevalence and predictors of alcohol use among college students in Ludhiana, Punjab, India. Indian J Med Res 2008; 128:79-81.
30. Devi RC, Rajan JK. Alcoholism: a Social Menace. www.kerala.gov.in/keralacal_may09/pg38-39.pdf
31. Chuang YC, Ennett ST, Bauman KE, Foshee VA. Neighborhood influences on adolescent cigarette and alcohol use: mediating effects through parent and peer behaviors. J Health Soc Behav 2005; 46: 187-204.
32. Ennett ST, Bauman KE, Hussong A, Faris R, Foshee VA, Cai L, et al. The peer context of adolescent substance use: findings from social network analysis. J Res Adolesc 2006; 16:159-186.
33. Urberg K, Goldstein MS, Toro PA. Supportive relationships as a moderator of the effects of parent and peer drinking on adolescent drinking. J Res Adolesc 2005; 15: 1-19.
34. Kuendig H, Kuntsche E. Family bonding and adolescent alcohol use: moderating effect of living with excessive drinking parents. Alcohol Alcohol 2006; 41:464-471.
35. Bandura, A. Social Learning Theory. Englewood Cliffs, NJ: Prentice Hall, 1977.
36. Alford GS, Jouriles EN, Jackson SC. Differences and similarities in development of drinking behavior between alcoholic offspring of alcoholics and alcoholic offspring of non-alcoholics. Addict Behav 1991; 16:341-347.
37. Hawkins JD, Graham JW, Maguin E, Abbott R, Hill KG, Catalano RF. Exploring the effects of age of alcohol use initiation and psychosocial risk factors on subsequent alcohol misuse. J Stud alcohol 1997; 58:280-290.
38. Dawson DA. The link between family history and early onset of alcoholism: earlier initiation of drinking or more rapid development of dependence? J Stud Alcohol 2000; 61: 637-646.
39. Chassin L, Pitts S, Prost J. Binge drinking trajectories from adolescence to emerging adulthood in a high-risk sample: predicators and substance abuse outcomes. J Consult Clin Psychol 2002; 70: 67-78.
40. Edayaranmula JJ. Drinking Patterns in Kerala. Alcohol & Drug Information Centre *(*ADIC*)*-India, 2007.
41. Mahato B, Ali A, Jahan M, Verma AN, Singh AR. Parent-child relationship in children of alcoholic and non-alcoholic parents. Indian J Psychiatry 2009; 18:32-35
42. Dent C, Grube JW, Biglan A. community level alcohol availability and enforcement of possession laws as predictors of youth drinking. Preventive Med 2005; 40:355-362.
43. Paschall MJ, Grube JW, Black CA, Ringwalt CL. Is commercial alcohol availability related to adolescent alcohol sources and alcohol use? Findings from a multi-level study. J Adolesc Health 2007; 41:168-174
44. World Health Organization. Global Status Report on Alcohol 2004. [http://www.who.int/ substance_abuse/ publications/ global_status_report_2004_overview. pdf.
45. Erblich J, Earleywine M, Erblich B. Positive and negative associations with alcohol and familial risk for alcoholism. Psychol Addict Behav 2001; 15:204-209.
46. Furtado EF, Laucht M, Schmidt MH. Psychiatric problems in children of alcoholic fathers. J Child Adolesc Psychiatr Psychotherapy 2002; 30:241-250.

47. Zucker. Unique and common factors in risk development for alcohol use disorder (AUD) in earlier childhood. http://www.bocyf.org/zucker_presentation.pdf)
48. Warner LA, White HR, Johnson V. Alcohol initiation experiences and family history of alcoholism as predictors of problem-drinking trajectories. J Stud Alcohol Drugs 2007; 68:56-65.

Anita Chopra, Scientist
Anju Dhawan, Associate Professor
Hem Sethi, Scientist
Devinder Mohan, Ex-Professor and Chief
National Drug Dependence Treatment Centre, All India Institute of Medical Sciences, New Delhi, India