Physiology Section

Alcohol Expectancy Responses from Teenagers: The Early Forewarning Signals

SANDHYA B., CAROL B.M.S., KOTIAN M.S., GANARAJA B.

ABSTRACT

Background: The Indian population is overwhelmed by the rapid developmental activities in the new millennium. This has brought in urbanization and several banes of the faster life. Alcoholism is one among the menaces which have to be tackled at an early stage.

Objective: To assess the subjective expectancies from alcohol intake in young college students.

Methods: We carried out a survey on the expectancy from youth of the alcohol effects, which in fact is known as the principal motivator of alcohol intake. We chose the pre-university students (n= 200; 100 males and 100 females) of one of the oldest and prestigious colleges of Mangalore (south India). The survey used the Comprehensive Effect of Alcohol (CEOA) where the students had to respond to two sets of 38 questions, in which they would mention whether they agreed or disagreed to the statement regarding the effects of alcohol intake.

Results: From the results, we found that these young students were in agreement of the view that alcohol could cause a positive reinforcement. They also strongly agreed that alcohol consumption could cause negative effects. This was significantly more pronounced among the girls. Strikingly, only 25% of the boys and 14.5% of girls had consumed alcohol before, who indicated a stronger positive reinforce response as compared to those who had not tasted alcohol.

Conclusions: The results reveal that the first exposure to alcohol consumption is the key factor which leads to alcoholism. If the experience of alcohol intake and the effects of alcohol are liked with the subjects, that becomes a motivating factor for future attempts. This needs a closer look by the clinicians, counselors and the parents, who need to actively interfere in educating the youth and in guiding them in the right direction during their formative ages.

INTRODUCTION

Alcoholism is a known problem worldwide. Alcohol has been accepted as the most widely available and the most abused drug. The implications of alcoholism are mind boggling, considering the personal, family, financial and the social effects. Still, the economic considerations of alcohol for the industry, the resource generation for the governments and the control of the sale and consumption of this addictive beverage meet many obstacles. Substance abuse has been reported to be prevalent among the Indian medical professionals too [1].

Drinking has been a problem in the campus. In the United States, 7% of all the adults and 19% of the adolescents are "problem drinkers" – who are addicted to ethanol. Most are, even if they are abstinent most of the time, likely to get into trouble when they drink. The ethanol related deaths exceed 100,000 each year, accounting for 5% of all the deaths in the United States. Drinking is widespread among the US university students [2]. A study reported that 65% of adolescents in a South Korean middle school had the knowledge and the experience of alcohol intake [3] and that 32.9% of the university students in an Italian university were binge drinkers [4].

Positive expectancies were reported by the adolescents who were drinkers [3]. But those without a previous experience of alcohol intake reported lower positive expectancies. This report is also similar to that found which was found among the Indian medical students in a study which was done by our group [5]. The expectancies were similar in Chinese students also, suggesting

that a higher positive expectancy was associated with drinking. Therefore, a positive expectancy appears to be directly related to a higher probaability of alcohol consumption [6]. However, the expectancies are related to the frequency of drinking rather than to the quantity of the consumption [7].

The cognition about alcohol and its effects are among the strongest predictors of alcohol intake [8,9]. The desire to regulate its effect is a principal motivator for alcoholism [10]. The intake of alcohol may cause disinhibition, which may act as a motive for taking alcohol [11]. Pabst and others [12] demonstrated that the positive reinforcement scores were stronger in the younger than 30 years age group and that they was less strong in the above 30 years age group. An interesting work which was carried out on Swedish women suggested that the mood may be a factor which controlled the alcohol intake. The expectancy of reducing, fleeing or enhancing the mood which resulted from alcohol intake could be a motivator for alcoholism [13,14]. Social anxiety also produced a positive expectancy of tension reduction and increased the assertiveness in both men and women [15].

A systematic approach is necessary to tackle the problem of excessive and compulsive alcohol intake. Teenage is the age group which needs to be monitored and guided to achieve this. Such studies were very rare in India. It is time that we give more importance to an early detection of alcoholic tendencies and to the preventive counseling of the prospective candidates. Moreover, a family history of alcoholism reportedly produced positive reinforcement

responses in the younger age group [16]. We undertook this study among the students of the 16-17 years age group, to assess their approach towards alcohol. This study may reveal the influence of the affective nature of alcohol on these young minds and their tendency to understand the gravity of abuse of this addictive beverage. The results of this study could be a whistle blower towards the intervention in prevention and rehabilitation programs.

MATERIALS AND METHODS

In this study, we used the Alcohol expectancy (Comprehensive Effects of Alcohol – CEOA) questionnaire [17]. We compared the responses of the students who were studying in a pre-university college (Equivalent to XII std/'O' Level). These students were about 16.7 ± 0.5 years of age. Both male and female students (total 200; 100 boys and 100 girls) were included in this study. A nonrandom sampling (convenient sampling) was done by calculating the sample size at a 95% confidence level. With an 85% power with reference to previous articles [5], it was about 190 and therefore we recruited 200 students for this study. The questionnaire was asked to be filled by each student, irrespective of their gender and economic status, whether they were city dwellers or had come from villages and whether they had taken or not taken alcohol before. Hence, the responses were the subjective feelings of the respondents towards alcohol.

The CEOA questionnaire evaluated the positive and negative responses, which are arranged randomly among the 38 responses from the subjects. Each question was classified into one of the following 7 categories: (e.g: Sociability: response item Number: 1,3,5,14,24,31,34 and 38).

The positive reinforcement responses included

1. Sociability, 2. Tension reduction, 3. Liquid courage, 4. Sexuality

Negative reinforcement:

5. Cognitive and behavioural impairment, 6. Risk and aggression and 7. Self perception.

The questionnaire comprised of 2 sets of options. The first set evaluated the comprehensive expected effects of alcohol, which examined: If I were under the influence of alcohol… I would feel.. (eg: I would be humorous). The responses to this, which ranged from 1 to 4 (Disagree -1, Disagree slightly -2, Slightly agree – 3 and Agree – 4) had to be given by the subject.

The second part of the questionnaire comprised of the subjective evaluation of each item; which would suggest whether the feelings which were felt after the alcohol intake, in his/her opinion, was bad (1), slightly bad (2), neutral (3), slightly good (4) and good (5). Here also, 38 responses were given, which corresponded to the expected effects which were mentioned in the former set. The evaluation part of the questionnaire was analyzed and it was found that the respondents were aware that the expectancies which were mentioned in the first set of questions were agreeable, which produced positive and negative effects. Only the analyses of the expectancy questionnaire responses are given on the tables.

The average of the responses were calculated and tabulated from each sub group, based on the gender, the economic background , on whether he/she had taken/not taken alcohol before and on his/her religion. The positive and the negative responses from each group and the intergroup responses were compared. This data was analyzed by the Student's 't' test, and ANOVA, which compared both the positive and negative reinforcement responses.

The questionnaire was given to all (those who are willing to participate). They were explained in detail about the procedure and were asked to 'tick' their response in the sheet against each question. Their participation in this study was absolutely optional. Their names and roll numbers were not asked and all the personal information was kept strictly confidential. All the responses were collected by explaining the implication to the students and after they signed the consent form. An ethical clearance was obtained from the institutional ethics committee at the outset.

RESULTS

The data obtained were analyzed by applying the suitable statistics, which revealed the following interesting findings. The data was obtained from the young students of a pre university college in a small cosmopolitan city of Mangalore, India. The study group comprised of both male and females, irrespective of whether they had consumed alcohol or not. The mean age of the study group was 16.7 ± 0.5 years. Most of them were highly meritorious and had come from good family back grounds. Of the 200 students 39 (19.5%) had taken alcohol before and the rest had not taken it. Among those who had taken it, 25 (25% of the boys) were boys and 14 (14% of the girls) were girls. The group statistics [Table/Fig-1] suggested that while most of the students had agreed that alcohol intake could cause negative reinforcements such as cognitive impairment (2.93±0.62), self perception (2.74±0.69) and risk taking (2.76 ± 0.74), their responses to the possible positive reinforcements did not appear that strong [sociability (2.41±0.59), tension reduction (2.04±0.93), liquid courage (2.51±0.84), sexuality (2.17±0.71). Thus, it appeared that the negative impact may be weighing higher than the positive reinforcement factors.

Comparison of the responses of males with that of the females [Table/Fig-2] revealed a far less agreement regarding the overall positive reinforcements as compared to the negative reinforcement responses in females. Except for tension reduction (p<0.001), the other positive reinforce responses showed no significant differences, thus suggesting that both male and females students had more or less similar views. The female respondents strongly felt that alcohol consumption could not cause any reduction in the tension as opposed to the opinions of the males. Among the negative responses, cognitive impairment (p<0.05) and self perception (p<0.001) showed significant gender differences. The group mean of the responses revealed that the whole group felt that alcohol could cause some positive reinforcement (2.28 in the scale of 1-4; disagree to agree). The negative reinforcement responses showed more affirmative feelings; 2.80 in the scale of 1-4; disagree to agree).

Three religious groups were present [Table/Fig-3]; Hindus (127), Christians (65) and Muslims (8). One way ANOVA revealed no significant differences among the three religious groups in the responses, except for self perception (p<0.05).

A comparison of the low (Rs 1,00000/year), medium (Rs 5,00000/year) and the high income (RS >5,00000) groups (ANOVA) showed no significant differences among them [Table/Fig-3].

A comparison of the responses between those who had taken alcohol and those of those who had not taken it, showed significant differences [Table/Fig-4]. Those who had taken alcohol had higher positive responses for sociability (2.63 vs 2.35, Student's 't' test p<0.01) and tension reduction (2.49 vs 1.93; p<0.001). There was no significant difference in the 'sexuality' (too young!). Among the

Expectancy	Mean±SD	
Sociability	2.41 ± 0.59	Mean score of positive responses: 2.25
Tension reduction	2.04 ± 0.93	
Liquid Courage	2.51 ± 0.84	
Sexuality	2.17± 0.17	
Cognitive impairment	2.93± 0.62	Mean score of negative Responses 2.81
Self perception	2.74± 0.69	
Risk & aggression	2.76±0.74	

[Table/Fig-1]: Group statistics showing the overall responses to positive and negative reinforcement responses:
Values (Mean±SD) of response scores (from 1- disagree to 4 – agree).

Expectancy	Males (Mean±SD)	Females (Mean±SD)	
Positive expectancy scores			
Sociability	2.50 ± 0.58	3.32±0.59	p<0.05
Tension reduction	2.25±0.95	1.83± 0.86	p<0.001
Liquid courage	2.61±0.82	2.41± 0.86	NS
Sexuality	2.23±0.74	2.11±0.73	NS
Negative expectancy scores			
Cognitive impairment	2.82±0.69	3.04± 0.52	p<0.05
Self Perception	2.59± 0.63	2.88 ± 0.72	p<0.01
Risk & aggression	2.73±0.65	2.78± 0.81	NS

[Table/Fig-2]: Expectancy responses among the male and female respondents.
Values (Mean±SD) of response scores (from 1- disagree to 4 – agree).

	Positive	Negative
Based on Religion		
Hindu (127)	2.32±0.54	2.82±0.41*
Christian (65)	2.23±0.61	2.76±0.53*
Muslim (8)	2.17±0.52	3.08±0.6**
Based on income		
Low (79)	2.34±0.41	2.84±0.32*
Medium (97)	2.22±0.5	2.75±0.6**
High (24)	2.33±0.47	2.92±0.41**
Based on origin		
Rural (19)	2.37±0.27	2.76± 0.4*
Urban (181)	2.28±0.51	2.81±0.45**

[Table/Fig-3]: Income, religion & place of origin based response scores:
Values (Mean±SD) of response scores (from 1- disagree to 4 – agree).
* p<0.05, ** p<0.001 Positive Vs Negative expectancies (Student's 't' test). ANOVA revealed no significant differences among different religions or income groups.

Expectancy	Taken alcohol (Mean±SD)	Not taken alcohol (Mean±SD)	
Positive expectancies			
Sociability	2.63±0.76	2.35±0.53	p<0.01
Tension reduction	2.49±0.87	1.93±0.91	p<0.001
Liquid courage	2.73±0.9	2.47±0.82	NS
Sexuality	2.28±0.71	2.15±0.74	NS
Negative expectancies			
Cognitive impairment	2.68± 0.57	3.00±0.61	p<0.01
Self perception	2.50±0.61	2.79±0.69	p<0.05
Risk & aggression	2.59±0.66	2.79±0.74	NS

[Table/Fig-4]: Expectancies from those who have taken alcohol and those have not taken alcohol. Values (Mean±SD) of response scores (from 1- disagree to 4 – agree).

negative reinforcement responses, cognitive impairment (2.68 vs 3.00, p<0.01) and 'self perception' (2.50 vs 2.79, p<0.05) were significantly towards an agreement. But 'risk taking' did not show any significant difference.

The origin of the respondents, whether they are from villages or urban areas, did not show any significant differences in any of the responses.

A second set of questionnaires which was designed to know the "evaluation" of the positive and negative reinforcement responses, evaluated the feelings of the respondents regarding the issues, whether they were bad or good in a scale of bad (1) to good (5). The mean of the group gave a 'neutral' response regarding the positive questions. This did not show any significant differences between boys and girls. The negative responses were given a 'slightly bad' rating. The male and female responses showed significant differences and the response from females was lesser than that from males significantly (p<0.05). The same pattern of observations was seen in both of those who had taken alcohol before and those who had not. ANOVA revealed that among all three religious groups, there were no significant differences. The income groups also did not show any intergroup differences.

DISCUSSION

The comprehensive alcohol expectancy questionnaire is very powerful instrument which can predict the tendency of alcoholism. In this study, we got responses from the teenage students who were studying in the classes, 11th and 12th. Both the boys and girls who willingly participated in this study were included in the analysis. The responses pattern showed a remarkable maturity and understanding of the subject. The present study revealed the trend of the teenagers in having the tendency to take alcohol in their formative years. We gave this questionnaire to all the students who are willing to participate in this study, irrespective of their gender, financial background, religion, village or urban origin and whether they had taken alcohol before or not. Only 19.5% students have consumed alcohol in the study group. One in four boys and 14% of the girls reported to have taken alcohol. A majority had not consumed alcohol. Therefore, the responses truly reflected the considered opinions of these students rather than their 'personal experiences'.

In our previous studies [5] on the responses from Ist year medical college students (2 years older than the present group), we found that those who had taken alcohol felt that alcohol could cause robust changes and improve the positive reinforcement. These findings were found to be true even in two different Asian countries viz. India and Malaysia [18]. In the present study, the negative reinforcement responses appeared to produce stronger responses. But they also agreed that alcohol could cause some improvement in the sociability and liquid courage. They did not feel that alcohol could cause tension reduction, and reduce the sexuality to same degree. The responses of this group should not be taken seriously as far as the sexuality and the sexual arousals are concerned. This is because; this age group (17-18 years) is not a sexually active age group in India.

There were no significant differences in the responses from rich or poor students and so also, in the responses from the students who followed different religions. The group comprised mainly of Hindus and Christians and a small number of Muslims. So, the values may not be very appropriate because the numbers were not comparable. A more wider study may be required, which should

involve the participants from different religious groups, to get a more authentic information.

There were significant variations in the responses of males and females [Table/Fig-2]. The females felt that alcohol could not cause tension reduction while the male respondents felt otherwise. The female students felt more strongly that alcohol intake might cause stronger negative reinforcements. This type of response is suggestive of the fact that the female respondents were wary of the deleterious effects of alcohol. Particularly, in the Indian context, the family values and the influence of parental guidance are the principal factors in the early molding of an individual. This sentiment regarding alcohol intake and the effects of alcohol are guided by the family environment. Hence, the responses of girls regarding the expected effects of alcohol have a direct bearing on the future generation. We feel that this was a significant outcome of this study.

From this study, we found that even in the group of young men, those who had taken alcohol before, had a more receptive expectancy from alcohol [Table/Fig-4]. They believed that alcohol could cause positive reinforcement responses which were the principal motivators from alcoholism. Though they responded in agreement that alcohol could produce negative responses, the responses were not as strong as the positive reinforcements. This finding must ring warning bells in the people who try interventions to tackle alcoholism. Therefore, we suggest that these kind of studies must be carried out in larger populations and find out the key age group at which a proper counseling could be carried out, to root out the menace of alcoholism from the society.

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AUTHOR(S):
1. Sandhya B.
2. Carol B.M.S
3. Kotian, M.S.
4. Ganaraja B.

PARTICULARS OF CONTRIBUTORS:
1. Department of Physiology, AJ Institute of Medical Sciences, Mangalore, India.
2. Research Fellow, MS Ramiah Medical College, Bangalore, India.
3. Biostatistician, Department of Community Medicine, Kasturba Medical College, Mangalore, India.
4. Department of Physiology, Kasturba Medical College (A Unit of Manipal University), Mangalore, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Ganaraja B.,
Additional Professor, Department of Physiology,
Kasturba Medical College,
(A Unit of Manipal University),
Centre for Basic Sciences, Bejai,
Mangalore – 575 004, India.
Phone: +91 9449642150
E-mail: ganaraj.b@gmail.com