

# PREVALENCE AND PATTERN OF SUBSTANCE ABUSE AMONG SCHOOL CHILDREN IN NORTHERN INDIA: A RAPID ASSESSMENT STUDY

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## ABSTRACT

**Background:** Substance abuse among children has become an issue of concern throughout the world. Increasing substance abuse and its impact on physical and psychosocial health is a worldwide public health concern affecting the early youth and subsequently the whole life of the individuals. Particularly disturbing fact is that the age of initiation of abuse is progressively falling. To plan effective interventions, it is essential to have information on the extent and type of substance abuse among school children and their attitude towards its control.

**Aims & Objective:** To find out the prevalence and pattern of substance abuse among school children and the associated risk factors.

**Material and Methods:** A descriptive cross-sectional survey was conducted among students (13-19 years) studying in classes 7th-12th in rural and urban areas of district Ambala, using the Self-Administered WHO Model Core Questionnaire. Stratified random sampling technique was used to select the respondents. A total of 1500 students studying in various government and private schools were taken for the study purpose.

**Results:** Overall prevalence of substance abuse was 60.0% for ever users and 34.93% for regular users. Substance abuse was more among male urban students belonging to nuclear families ( $p < 0.001$ ). Among ever users, alcohol (44.49%) was the most common substance abused while tobacco (14.42%) was mostly consumed by regular users. Substance abuse was more in age group of 17-19 years. Overall 42% were using more than one drug combination.

**Conclusion:** Prevalence of substance use among school children in Northern India is high and causes significant physical and psychosocial problems in this population. A large proportion of those using drugs reported serious adverse effects, raising the necessity of targeted interventions to reduce the risk of subsequent substance dependence and other deleterious consequences.

**KEY-WORDS:** Substance Abuse; Prevalence; Ever Users; Regular Users; School Children

## Introduction

As we find ourselves in the beginning of a new millennium, we are faced with challenges to our survival. Some of the greatest threats to our survival are sweeping epidemics that affect millions of individuals worldwide. Substance Abuse, although often regarded as a personality disorder, may also be seen as a worldwide epidemic with evolutionary genetic, physiological and environmental influences controlling this behaviour.<sup>[1]</sup> Rapid industrialization, urbanization and changing life styles have left children struggling for their survival, forcing many to refuge in the dark world of substance abuse. Its use poses a significant threat to the health, social and economic fabric of families, communities and

nations. Substance Abuse among children has become an issue of concern throughout the world. Increasing substance abuse and its impact on physical and psychosocial health is a worldwide public health concern affecting the early youth and subsequently the whole life of the individuals. Rapid industrialization, urbanization and changing life styles have left children struggling for their survival, forcing many to refuge in the dark world of substance abuse.<sup>[2]</sup>

In India the epidemic of substance abuse in children has assumed alarming dimensions. Changing cultures, increasing economic stress, dwindling supportive bonds, issues of poverty, ignorance, migration and exploitation are leading to initiation into substance abuse. Alcohol,

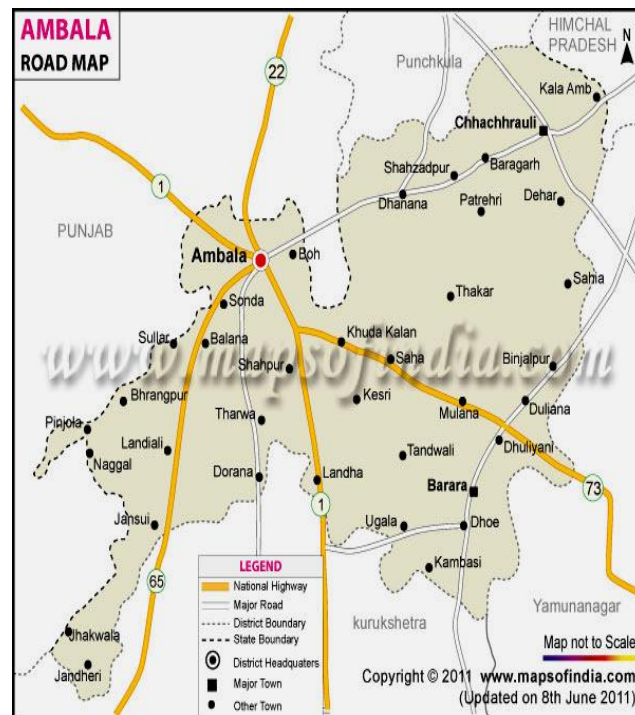
tobacco, cannabis along with minor tranquilizers and analgesics are the common substances of abuse. During the past several years, there has been a renewed national concern about substance abuse culminating in the current War on drugs. Recently substance abuse has been increasing among children as sizeable proportions of children in many states of India experiment with drugs quite early in life.<sup>[3]</sup> Among the youth, students are particularly involved due to increasing academic pressures, encouragement by peers, lure of popularity and easy availability of many such substances like alcohol, tobacco (cigarettes and gutka) and other drugs. Early initiation of substance abuse is usually associated with a poor prognosis and a lifelong pattern of deceit and irresponsible behavior.<sup>[4]</sup>

There is no comprehensive national survey available on the extent, pattern and nature of substance abuse in our country. Small sample studies indicate that in addition to the abuse of traditional substances i.e. alcohol, tobacco, cannabis, opium and heroin, there is also an increase in the abuse of pharmaceutical preparations. As a result of lack of information and systemic information dissemination process, drug concerns had been pushed back to the backburner in the overall development process in the country till now. But problem of drug abuse has now become worry to the government, a serious threat to the society and a curse to humanity.<sup>[5]</sup> Thus knowledge of the prevalence of substance abuse important in estimating the burden of the problem and facilitates evaluation of public health interventions. In District Ambala of Haryana (India), not much work has been done to reveal the status of substance abuse among school going children. This study is an attempt to provide health professionals with reliable information on the magnitude and pattern of the problem in school going children and major determinants of substance abuse. Such information would be valuable for programme planning, priority allocation and mobilizing political commitment.

## Materials and Methods

The present study was a school based cross – sectional study carried out in 8 Government and 4

Private schools of rural and urban areas of District Ambala, Haryana [Figure-1]. The study was carried out over a period of one year i.e. from January 2010 to December 2010. The study population consisted of school going children of 13 to 19 years studying in 7<sup>th</sup> -12<sup>th</sup> classes which comprised of 1500 students.



**Figure-1: Map Showing Location of Schools Selected for the Study Purpose**

A Stratified random sampling technique was used for sample collection. To work out the required sample size the following equation was applied ( $n=4pq/L^2$ ). As the data on prevalence rate of substance abuse for Haryana state (India) was not available, the sample size was calculated by presuming the prevalence of substance abuse to be 21% (mean reported prevalence in India) and as such the sample size for the study came out to be 1500.

## Sampling Technique

Ambala District had a total number of 224 higher secondary and senior secondary schools (as per the record available with the District Education Office, Ambala). These schools are situated in rural and urban areas of the district. These are further grouped into two categories: Government and Private schools. Both the type of schools, situated in urban and rural areas of the District Ambala was included in the study. To adjust for

the difference in environment of only boys, only girls and co-educational schools, only co-educational schools were taken in study. There were 134 government and 69 private co-educational schools in the 6 Community Development blocks of District Ambala. As the number of schools in the government and private sectors were in the ratio of 2:1, so the number of schools included in the study were 8 government and 4 private schools, which were selected at random. The number of schools in the government sector was more in rural areas and greater numbers of private schools were located in urban areas so the students were proportionately allocated to cover a sample size of 1500 (1075 from government and 425 from private schools. Out of a total of 1500 surveyed, only 1454 were included for the study making a response rate of 96.9%. The reasons for exclusion were incompletely filled, wrongly filled and the proforma left blank. One section of each class from selected school was included in the study which was taken at random. Students in age group from 13-19 years from all classes of 7<sup>th</sup> standard to +2 were included in the study.

### Sample Frame

This was self-administered anonymous questionnaire; therefore perception of the questions was required. The above mentioned study population was chosen because of the following reasons:

- a. It was seen that risk-taking behaviours begin to manifest from the middle adolescence onward.
- b. The understanding level of students from class VII onward allows the administration of a self-administered questionnaire, and young students might not understand the questionnaire, which could give rise to false responses and low response rates.
- c. The initiation of substance use usually begins at the age of 13-14 years which corresponds to VII class onwards.
- d. Lastly similar studies on student population have been carried out class VII onwards.

Therefore, the classes and the age group chosen represented an ideal population for this study.

### Study Instrument (Content Validity and Reliability)

Two pretested questionnaires were used to assess the prevalence of substance abuse in schools. These were:

1. A self-reporting questionnaire, as developed by WHO (1980)<sup>[6]</sup>, to screen students for substance abuse. This proforma is most commonly used proforma internationally to screen individuals for substance abuse. The content, criteria and construct validity of this questionnaire has been supported by four decades of research, consultation, feedback and revision. The questionnaire is intended to be multi-purpose model instrument with core standardized questions relating to substance use that can be administered with minimal training and supervision to arrange different target populations
2. A self-designed, self-report questionnaire to assess effect of socio-environmental factors on substance abuse. Relevant information regarding various socio-environmental factors of the students was taken.

### Data Collection Procedure

The study was conducted after obtaining written permission from District Education Officer, Ambala. Permission was also obtained from the Principals of the selected schools. Both the questionnaires were translated in Hindi and retranslated in English to ascertain any unacceptable deviation from the original. The two versions were used freely according to the preference of the respondents. The weekly schedule of the students was taken and adjusted accordingly to make them available for the study, without disturbing much of their teaching schedule. One section of each class was included at random where more than one section was there. The students were explained the purpose of the study. They were assured of utmost confidentiality. The method of filling the questionnaire was explained to the students. The respective teachers were requested to stay away from class rooms because their presence could influence the students. Thereafter the performas were filled by the students in the presence of researcher. No interpersonal discussions were

allowed in between and all the queries raised by students were clarified by the researcher. The performas were collected simultaneously from all the students and on an average 50 minutes were spent for the whole process.

**Data Analysis**

The completed questionnaires were scored according to the guidelines of WHO Model Core Questionnaire to identify substance abuse problems. The prevalence and pattern of various substance abuse disorders was also calculated. Analysis was done using SPSS Version 17 software. Categorical variables were compared employing non parametric tests (chi-square, fisher exact test) whereas continuous variables were compared by using student’s t-test and p value <0.05 was considered significant.

**Working Definitions**

- Drug: Drug has been defined by WHO as, “any substance that, when taken into living organism, may modify one or more of its functions”.
- Drug abuse: It is defined as, “persistent or sporadic excessive drug use, inconsistent with or unrelated to acceptable medical practice”.
- Drug addiction: It is defined as “a state of periodic or chronic intoxication detrimental to an individual and society, produced by the repeated consumption of a drug (natural/synthetic)”.
- Licit substance use: Use and sale of substances which are legal and not forbidden by the law e.g. tobacco and alcohol.
- Illicit substance use: Use & sale of substances which are illegal and forbidden by the law. e.g. cannabis, opiates and tranquilizers.
- Ever user: A person who accepts having taken any kind of drug in his lifetime.
- Regular user: A person who has taken drug during the past one year and has been taking it at least once a week or several times in the previous month.

**Results**

A total of 1454 students were included in the study. The mean age of the student population

was 15.2 years (16.2 in rural area and 15.4 in urban area). Majority (51.92%) of the population belonged to the age group of 15-17 years. Males outnumbered females in the ratio of 1.8:1 (rural-1.5:1 and urban-1.6:1 respectively). Proportion of Hindus was maximum (73.10%) followed by Sikhs (19.94%) and Muslims (5.98%). More of the students belonged to the nuclear families (57.49%) as compared to the joint families (42.50%). Overall there was almost equal representation of students from all the classes (VII to XII) ranging from 15.98% to 17.40% respectively. A majority of students belonged to the government schools (71.93%). Most of the students belonged to middle socioeconomic status (SE classes II, III and IV) [Table-1].

**Table-1: Socio-Demographic Profile of the Study Population (n=1454)**

| Characteristics       |           | Rural<br>(n=695)<br>N (%) | Urban<br>(n=759)<br>N (%) | Total<br>(n=1454)<br>N (%) |
|-----------------------|-----------|---------------------------|---------------------------|----------------------------|
| Age (Years)           | 13 – 15   | 145 (20.80)               | 153 (20.15)               | 298 (20.49)                |
|                       | 15 – 17   | 352 (50.64)               | 403 (53.09)               | 755 (51.92)                |
|                       | 17 – 19   | 198 (28.48)               | 203 (26.74)               | 401 (27.57)                |
| Sex                   | Male      | 469 (67.48)               | 546 (71.49)               | 1015 (69.81)               |
|                       | Female    | 226 (32.52)               | 213 (28.06)               | 439 (30.19)                |
| Type of Family        | Nuclear   | 196 (28.20)               | 640 (84.32)               | 836 (57.49)                |
|                       | Joint     | 499 (71.75)               | 119 (15.67)               | 618 (42.50)                |
| Academic Standard     | 7         | 113 (16.25)               | 118 (15.54)               | 232 (15.98)                |
|                       | 8         | 114 (16.40)               | 127 (16.73)               | 241 (16.57)                |
|                       | 9         | 122 (17.55)               | 131 (17.12)               | 253 (17.40)                |
|                       | 10        | 110 (15.82)               | 127 (16.73)               | 237 (16.29)                |
|                       | 11        | 116 (16.69)               | 130 (17.01)               | 246 (16.91)                |
|                       | 12        | 120 (17.26)               | 126 (16.13)               | 245 (16.11)                |
| Type of School        | Govt.     | 594 (85.46)               | 452 (59.55)               | 1046 (71.93)               |
|                       | Private   | 101 (14.53)               | 307 (40.44)               | 408 (28.06)                |
| Socio-Economic Status | I         | 35 (5.10)                 | 85 (11.20)                | 120 (8.25)                 |
|                       | II        | 100 (14.50)               | 202 (26.70)               | 302 (20.77)                |
|                       | III       | 190 (27.40)               | 257 (33.80)               | 447 (30.74)                |
|                       | IV        | 210 (30.30)               | 172 (22.70)               | 382 (26.27)                |
|                       | V         | 160 (23.02)               | 43 (5.66)                 | 203 (13.96)                |
| Religion              | Hindu     | 516 (74.24)               | 547 (72.06)               | 1063 (73.10)               |
|                       | Sikh      | 129 (18.56)               | 161 (21.21)               | 290 (19.94)                |
|                       | Muslim    | 44 (6.33)                 | 43 (5.66)                 | 87 (5.98)                  |
|                       | Christian | 0 (0)                     | 0 (0)                     | 0 (0)                      |
|                       | Others    | 6 (0.86)                  | 8 (1.05)                  | 14 (0.96)                  |

Among the study participants, 871(60.0%) had used a substance at least once in lifetime (ever users) while 508 (34.93%) were regular users. Among regular substance users the prevalence was more (39.65%) among urban students as compared to rural students (29.78%). Similarly ever substance users were more (67.30%) in urban area as compared to rural area (52.08%). This difference was found to be statistically highly significant (p<0.001) [Table-2].

**Table-2: Prevalence of Substance Abuse in Rural and Urban Students**

| Residential Status | Ever Users N (%)  | Regular Users N (%) | Total       |
|--------------------|-------------------|---------------------|-------------|
| Rural              | 361 (52.08)       | 207 (29.78)         | 695         |
| Urban              | 510 (67.30)       | 301 (39.65)         | 759         |
| <b>Total</b>       | <b>871 (60.0)</b> | <b>508 (34.93)</b>  | <b>1454</b> |

( $\chi^2 = 23.02, df = 1, p < 0.001$ )

**Table-3: Distribution of Substance Abuse as per Age**

| Age Group (Years) | Rural (n=695) |                     | Urban (n=759) |                     | Total (n=1454) |                     |
|-------------------|---------------|---------------------|---------------|---------------------|----------------|---------------------|
|                   | Total         | Regular Users N (%) | Total         | Regular Users N (%) | Total          | Regular Users N (%) |
| 13 – 15           | 145           | 30 (21.2)           | 153           | 48 (31.37)          | 298            | 78 (26.17)          |
| 15 – 17           | 352           | 95 (26.98)          | 403           | 160 (39.70)         | 755            | 255 (33.77)         |
| 17 – 19           | 198           | 82 (41.4)           | 203           | 93 (45.8)           | 401            | 175 (43.64)         |
| <b>Total</b>      | <b>695</b>    | <b>207 (29.78)</b>  | <b>759</b>    | <b>301 (39.65)</b>  | <b>1454</b>    | <b>508 (34.93)</b>  |

( $\chi^2 = 23.88, df = 2, p < 0.001$ )

**Table-4: Distribution of Substance Abuse as per Gender of Students**

| Gender         | Rural (n=695)     |                     | Urban (n=759)     |                     | Total (n=1454)    |                     |
|----------------|-------------------|---------------------|-------------------|---------------------|-------------------|---------------------|
|                | Total             | Regular Users N (%) | Total             | Regular Users N (%) | Total             | Regular Users N (%) |
| Male           | 469               | 177 (37.73)         | 546               | 253 (46.33)         | 1015              | 430 (42.36)         |
| Female         | 226               | 30 (13.20)          | 213               | 48 (22.4)           | 439               | 78 (17.76)          |
| <b>Total</b>   | <b>695</b>        | <b>207 (29.78)</b>  | <b>759</b>        | <b>301 (39.65)</b>  | <b>1454</b>       | <b>508 (34.93)</b>  |
| $\chi^2$ (df)  | <b>43.65 (1)</b>  |                     | <b>36.27 (1)</b>  |                     | <b>81.56 (1)</b>  |                     |
| <b>P value</b> | <b>&lt; 0.001</b> |                     | <b>&lt; 0.001</b> |                     | <b>&lt; 0.001</b> |                     |

**Table-5: Prevalence of Type of Substance Abuse in Ever Users (Multiple responses)**

| Substance Abuse       | Rural (n=695) |      | Urban (n=759) |      | Total (n=1454) |       |
|-----------------------|---------------|------|---------------|------|----------------|-------|
|                       | N             | (%)  | N             | (%)  | N              | (%)   |
| Tobacco Smoking       | 198           | 28.6 | 321           | 42.3 | 519            | 35.69 |
| Tobacco Chewing       | 263           | 37.9 | 238           | 31.4 | 501            | 35.0  |
| Alcohol               | 287           | 41.4 | 360           | 47.5 | 647            | 44.49 |
| Tranquilizers         | 28            | 4.02 | 44            | 5.79 | 72             | 4.95  |
| Amphetamines          | 10            | 1.43 | 21            | 2.76 | 31             | 2.13  |
| Sedatives & Hypnotics | 03            | 0.43 | 05            | 0.65 | 08             | 0.55  |
| Cannabis              | 38            | 5.5  | 85            | 11.3 | 123            | 8.45  |
| Hallucinogens         | 01            | 0.14 | 02            | 0.26 | 03             | 0.20  |
| Cocaine               | 02            | 0.24 | 04            | 0.52 | 06             | 0.41  |
| Heroin                | 01            | 0.14 | 02            | 0.26 | 03             | 0.20  |
| Opium                 | 02            | 0.24 | 04            | 0.52 | 06             | 0.41  |
| Opiates               | 35            | 5.1  | 59            | 7.77 | 94             | 6.46  |
| Volatile Inhalants    | 14            | 2.1  | 24            | 3.2  | 38             | 2.61  |
| I /V Drugs            | 01            | 0.14 | 03            | 0.39 | 04             | 0.27  |

Prevalence of substance abuse showed an increased trend with increasing age of students. It increased from 26.17% in 13-15 years to 43.64% in 17-19 year age group. The mean age of substance abuse was 16.5 years in rural area and 15.5 years in urban area. The substance abuse was more among urban area as compared to rural area for all age groups. Overall the difference in the prevalence of substance abuse in various age groups was found to be statistically highly significant ( $p < 0.001$ ) [Table-3]. Sex-wise

prevalence of substance abuse was significantly higher ( $p < 0.05$ ) among male students (42.36%) belonging to the urban areas (46.33%) [Table-4].

**Table-6: Prevalence of Type of Substance Abuse in Regular Users (Multiple responses)**

| Substance Abuse       | Rural (n=695) |      | Urban (n=759) |      | Total (n=1454) |       |
|-----------------------|---------------|------|---------------|------|----------------|-------|
|                       | N             | (%)  | N             | (%)  | N              | (%)   |
| Tobacco Smoking       | 85            | 12.3 | 125           | 16.5 | 210            | 14.42 |
| Tobacco Chewing       | 101           | 14.6 | 85            | 11.3 | 186            | 12.79 |
| Alcohol               | 78            | 11.1 | 107           | 14.2 | 185            | 12.72 |
| Tranquilizers         | 07            | 1.0  | 10            | 1.31 | 17             | 1.16  |
| Amphetamines          | 02            | 0.28 | 04            | 0.52 | 06             | 0.41  |
| Sedatives & Hypnotics | 01            | 0.14 | 02            | 0.26 | 03             | 0.20  |
| Cannabis              | 12            | 1.7  | 17            | 2.3  | 29             | 1.99  |
| Hallucinogens         | -             | -    | -             | -    | -              | -     |
| Cocaine               | -             | -    | -             | -    | -              | -     |
| Heroin                | -             | -    | -             | -    | -              | -     |
| Opium                 | -             | -    | -             | -    | -              | -     |
| Opiates               | 09            | 1.3  | 14            | 1.8  | 23             | 1.58  |
| Volatile Inhalants    | -             | -    | 01            | 0.13 | 01             | 0.06  |
| I /V Drugs            | -             | -    | -             | -    | -              | -     |

**Table-7: Distribution of Regular Substance Users as per Age of Initiation**

| Substance Abuse       | Regular Users | < 13 yrs |       | 13-16 yrs |       | 16-19 yrs |       |
|-----------------------|---------------|----------|-------|-----------|-------|-----------|-------|
|                       |               | N        | (%)   | N         | (%)   | N         | (%)   |
| Tobacco Smoking       | 210           | 19       | 9.04  | 111       | 52.85 | 80        | 38.09 |
| Tobacco Chewing       | 186           | 22       | 11.82 | 98        | 52.68 | 66        | 35.48 |
| Alcohol               | 185           | 15       | 8.10  | 115       | 62.16 | 55        | 29.72 |
| Tranquilizers         | 17            | 02       | 11.76 | 09        | 52.94 | 06        | 35.29 |
| Amphetamines          | 06            | 01       | 16.66 | 02        | 33.3  | 03        | 50.0  |
| Sedatives & Hypnotics | 03            | -        | -     | 01        | 33.3  | 02        | 66.6  |
| Cannabis              | 29            | 03       | 10.34 | 10        | 34.48 | 16        | 55.17 |
| Hallucinogens         | -             | -        | -     | -         | -     | -         | -     |
| Cocaine               | -             | -        | -     | -         | -     | -         | -     |
| Heroin                | -             | -        | -     | -         | -     | -         | -     |
| Opium                 | -             | -        | -     | -         | -     | -         | -     |
| Opiates               | 23            | 02       | 8.69  | 06        | 26.08 | 15        | 65.21 |
| Volatile Inhalants    | 01            | -        | -     | -         | -     | 01        | 100   |
| I /V Drugs            | -             | -        | -     | -         | -     | -         | -     |

**Table-8: Distribution of Regular Substance Users by Drug Combinations**

| Drug Combinations                       | Rural (n=695) |              | Urban (n=759) |              | Total (n=1454) |              |
|---|---------------|--------------|---------------|--------------|----------------|--------------|
|   | N             | (%)          | N             | (%)          | N              | (%)          |
| Single drug                             | 135           | 65.21        | 162           | 53.82        | 297            | 58.46        |
| Tobacco + Alcohol                       | 45            | 21.73        | 103           | 34.21        | 148            | 29.13        |
| Amphetamines + Tranquilizers + Cannabis | 15            | 7.24         | 21            | 6.97         | 36             | 7.08         |
| Other Drug Combinations                 | 12            | 5.79         | 15            | 4.98         | 27             | 5.31         |
| <b>Total</b>                            | <b>207</b>    | <b>100.0</b> | <b>301</b>    | <b>100.0</b> | <b>508</b>     | <b>100.0</b> |

In Ever users alcohol was the most widely used substance by approximately half (44.49%) of the students surveyed at least once in lifetime (with 41.4% in rural area and 47.5% in urban area); followed by tobacco smoking which was 35.69% (with 28.6% in rural area and 42.3% in urban

area), tobacco chewing was 35.0% (with 37.9% in rural area and 31.4% in urban area), cannabis was 8.45%, opiates was 6.46%, tranquilizer was 4.95%, volatile inhalants was 2.61% and amphetamines was 2.3% respectively. There were multiple responses by the students to the type of substance abuse. The prevalence of ever substance abuse was more in urban students for all the drugs with the exception of tobacco chewing which was more in rural students (37.9%) as compared to urban students (31.4%) [Table-5].

Regarding Regular users the prevalence of tobacco smoking was maximum 14.42% (with 12.3% in rural area and 16.5% in urban area) followed by tobacco chewing which was 12.79% (with 14.6% in rural area and 11.3% in urban area) and alcohol was 12.72% (with 11.1% in rural area and 14.2% in urban area). The prevalence of cannabis, opiates and tranquilizers was 1.99% 1.58% and 1.16% respectively. There was only one student from urban area who was abusing volatile inhalants. There were no cocaine, opium, hallucinogens, heroin and IV drug users in both rural as well as urban students. There were multiple responses by the students to the type of substance abuse. The prevalence of regular substance abuse was more in urban students for all the drugs with the exception of tobacco chewing which was more (14.6%) in rural students as compared to urban students (11.3%) [Table-6].

Commonest age of onset of substance abuse was 13 – 16 years followed by 16 – 19 years. In 13 – 16 years age group percentages of students who started tobacco, alcohol, tranquilizers, amphetamine, sedative & hypnotics, cannabis and opiates were 52.85%, 52.68, 62.16%, 52.94%, 33.3%, 34.48% and 26.08% respectively. The mean age of initiation of substance abuse was 14.5 years with 14.0 years in urban students and 15.0 years in rural students. There were no users of cocaine, hallucinogens, heroin, opium and I/V drugs in all the age groups [Table-7].

Overall 58.46% regular users were using single drug (with 65.21% in rural and 53.82% in urban area) and thus nearly 42% of the total regular users were using more than one drug. There were

more multiple drug users among urban students (46.16%) as compared to the rural students (34.76%). The most common combination (29.13%) was alcohol + tobacco (34.21% in urban area and 21.73% in rural area students respectively). Students using more than two drug combinations (7.08%) with amphetamines+ tranquilizers+ cannabis were almost equal in both the groups (rural-7.24% and urban-6.97% respectively). 5.31% of the students used other drug combinations which included volatile inhalants, opiates, sedatives and hypnotics [Table-8].

## Discussion

Global studies have revealed that substance abuse is widespread and the age of initiation is falling rapidly. Substance abuse is dependent on multiple variables that have been explored in details in developed countries but still in developing countries like India, there are not many studies done on this problem. The present study has brought out certain important observations which are being discussed here.

### General Prevalence of Substance Abuse

The research revealed that 60.0% of the students were ever users and 34.93% were taking it regularly. The findings were almost similar to a study done by Juyal et al<sup>[6]</sup> in Dehradun (58.7%), Ningombam et al<sup>[7]</sup> in Manipur (54%) and Jibril et al<sup>[8]</sup> in Nigeria (66.2%) respectively. However the prevalence was much higher than as reported by Saxena et al<sup>[9]</sup> in Dehradun (46.9%), Sarangi et al<sup>[10]</sup> in Sambalpur (43.4%), Singh et al<sup>[11]</sup> in National Capital Territory (9.8%) and Kapil et al<sup>[12]</sup> in Delhi (13.4%). The reason for the high prevalence could be due to the fact that in this part of the country there is easy availability and accessibility of substances especially tobacco and alcohol which are frequently taken by children and are more or less socially acceptable. Moreover in the last decade, vigorous advertising has led to increased consumption of these substances.

Regular drug abuse was found to be 34.93% which supports the findings of studies done by Juyal et al<sup>[6]</sup> in Dehradun and Ningombam et al<sup>[7]</sup> in Manipur who found the prevalence of regular

users as 31.3% and 35.0% respectively whereas it was much higher than as found in a study by Patel et al<sup>[13]</sup> in Baroda (4%) and Jamshid and Masha<sup>[14]</sup> in Iran (13.86%). The variation in the results between different regions of India may be due to different socio-cultural environment in different parts of India.

### **Pattern of Substance Abuse among Students (Ever and Regular Users)**

The research revealed that among ever users, alcohol was the commonest substance being abused (44.49%), followed by tobacco smoking and chewing (35.69% and 35.0% respectively), cannabis (8.45%), opiates (6.46%), tranquilizers (4.95%), amphetamines (2.13%) and volatile inhalants (2.61%). The consumption of ever use of alcohol came out to be 44.49% which is similar to as reported by Ray et al<sup>[15]</sup> who found alcohol was the most common substance used among students (40.0%) whereas it was higher than reported by Ningombam et al<sup>[7]</sup> in Manipur, Verma and Dang<sup>[16]</sup> in Chandigarh, Mohan et al<sup>[17]</sup> in Delhi, Yisa et al<sup>[18]</sup> in Nigeria and Sarangi et al<sup>[10]</sup> in Sambalpur who in their studies revealed that the ever use of alcohol was 29%, 21.6%, 26.2%, 33.9% and 14.7% respectively. Ever use of tobacco (smoking and chewing) came out to be 35.69% and 35.0% respectively which is similar to the findings of Saxena et al<sup>[9]</sup> in Dehradun and Singh et al<sup>[19]</sup> in Trinidad and Tobago (33.1%, 35.1% and 35% respectively) and higher than as reported by Juyal et al<sup>[6]</sup> in Dehradun (11.7%), Yisa et al<sup>[18]</sup> in Nigeria (10.6%) and Jibril et al<sup>[8]</sup> in Nigeria (21.5%). Cannabis came out to be 8.45% which is almost similar in a study done by Juyal et al<sup>[6]</sup> in Dehradun (9.8%) and Singh et al<sup>[19]</sup> (8.0%) in Trinidad and Tobago. Opiate consumption was found to be 6.46% which is lower than as reported by Ningombam et al<sup>[7]</sup> in Manipur (12%) and higher than as revealed by Ray et al<sup>[15]</sup> in Delhi who found the ever use of opiates as 1.3% respectively. Regarding tranquilizers ever use came out to be 4.95% which is similar to a study done by Verma and Dang<sup>[16]</sup> (3.5%) whereas it lower than as reported by Mohan et al<sup>[17]</sup> in Delhi (8.9%) and Ferigolo et al<sup>[20]</sup> in Southern Brazil who found tranquilizer abuse to be 13.4%. Amphetamines abuse came out to be 2.13% which is less than as reported by Verma and Dang<sup>[16]</sup>

(4.0%), Ferigolo et al<sup>[20]</sup> (6.5%) and Mohan et al<sup>[17]</sup> (5.8%), whereas Ningombiam et al<sup>[7]</sup> found none of the students ever used amphetamine. Volatile inhalants was found out to be 2.61% which is very less as compared to a study by Ferigolo et al<sup>[20]</sup> and Jibril et al<sup>[8]</sup> who found the ever use of volatile inhalants to be 49.2% and 21.5% respectively.

Commenting on pattern of regular drug use, it was highest for tobacco smoking and chewing (14.42% and 12.79% respectively), followed by alcohol (12.72%), cannabis (1.99%) and opiates (1.58%). Juyal et al<sup>[6]</sup> found regular use of areca nut/panmasala (21.8%) and tobacco smoking (4.7%). Amiri et al<sup>[21]</sup> in their study in Iran found 21.8% students were regular/current smokers. Regular consumption of alcohol came out to be 12.72% which was more than as reported by Juyal et al<sup>[6]</sup> (1.6%) and Jamshid and Masha<sup>[14]</sup> (4.3%). Cannabis intake was found to be 1.99% which was almost similar to a study done by Juyal R et al<sup>[6]</sup> in Dehradun who reported the prevalence of regular use of cannabis as 2.3%. The regular use of opiates came out to be 1.58% whereas it was 0.3% in a study by Jamshid and Masha<sup>[14]</sup> in Iran.

### **Various Factors Associated with Substance Abuse**

In the present study substance abuse was found to have significant association with age. Substance abuse increased with increasing age of the students. The reason could be due to the fact that as children move from early adolescence to late adolescence and young adulthood, they encounter dramatic physical, emotional and lifestyle changes. Developmental transitions, such as puberty and increasing independence, have been associated with substance abuse. There is an increase in the risk taking behaviour, experimentation and curiosity. Kapoor et al<sup>[22]</sup> (Haryana) and Tsering and Pal<sup>[23]</sup> (Sikkim) also observed in their studies that increasing age was significantly associated with increasing prevalence of substance abuse.

Sex-wise it was revealed that substance abuse was significantly more among male students as compared to their female counterparts. The reason could be due to the fact that in males the

level of exposure is more; friends/peer pressure is more whereas in females there is family and societal binding. Moreover many of the substances such as tobacco and alcohol are socially acceptable if practiced among males. Similar studies by Sarangi et al<sup>[10]</sup> (49.5% and 34.6%) and Kapil et al<sup>[12]</sup> (9.7% and 8.9%), found similar results with male students abusing more than female students.

Regarding age of initiation of abuse, it was revealed that the commonest age of onset of substance abuse was 13-16 years. This could be attributed due to fact that experimentation with drugs, enjoyment and curiosity of taking drugs usually starts in 13-16 years of age which may be attributed to the behavioural change in the children from childhood to early and late adolescence. Children want to be like adults. Moreover the imitating role models and the impact of media have also contributed to the early initiation of substance abuse. Similar results were obtained by Narain et al<sup>[24]</sup> in Noida (12.4 years) and Muttappallymyalil et al<sup>[25]</sup> in Kerala (14.4 years).

In respect to the drug combinations, nearly half (42%) of the students were poly drug abusers. Among poly drug users, tobacco and alcohol was the commonest combination (29.13%), followed by three drug combination (amphetamines, cannabis and tranquilizers) which was 7.08%. The reason could be due to the fact that the consumption of one particular drug results in craving or the urgency to take multiple drugs. Moreover in many cases, children take secondary drugs to balance or counter the effects and feelings of a primary drug. This problem of poly drug abuse which is more prevalent in developed countries has now assumed shape in developing countries as well. In a study by Mohan et al<sup>[17]</sup> in Delhi it was revealed that 65% and 58% of the abusers were abusing multiple drugs. In developed countries the prevalence of poly drug abuse is quite high which is evident from the study by Arditti et al<sup>[26]</sup> in southern France (50%). In a similar study by Poulin and Elliot<sup>[27]</sup>, the three most common patterns of multiple substance abuses were: use of alcohol only (21%), use of alcohol + cannabis (16%), and the use of alcohol + cannabis +cigarettes (11%).

### Limitations of the Study

We could not follow up the study due to lack of financial support. The study findings also show that in spite of several anti-drug measures such as campaigns, education, prohibition of products and sale and restriction of smoking at public places, no considerable decline in the use of drugs could be observed. Besides tobacco and alcohol, the use of other drugs is comparatively low and anti-drug measures are also not well felt or hardly felt.

### Future Directions of the Study

Health impact due to the drugs especially tobacco and alcohol may be bigger than projected if these school going children carry on consuming it as young adults. Further epidemiological exploration and interventions to curb substance abuse among the growing future generations is the call of the day.

### Conclusion

Early recognition of the extent and pattern of substance abuse among school children can improve scopes for holistic approaches before solutions become easier said than done.

### Recommendations

The study has brought out a high prevalence of substance abuse among students and the influence of socio-cultural environment on it. Following steps can be taken for prevention of substance abuse:

- Primary prevention of the substance abuse starts at home, where the socio-cultural environment begins to form the character and personality of the child. The education and awareness of the parents regarding drug abuse therefore is of paramount importance.
- School environment is a protective factor against many risk behaviors including substance abuse. The intervention strategies often include providing factual information about substance abuse, management of alcohol, tobacco and drug related incidents, imparting life skills training, and legislation relevant to substance misuse.



- Apart from this, efforts can be made at regional and national level to limit this problem among children. Dissemination of information by mass media like radio, television, street plays, newspapers and documentaries should be done. Organizing discussions of the social consequences in conferences and seminars in educational institutions is also an effective measure for prevention of drug abuse. For secondary prevention, drug dependence and treatment centre should be opened at least one for each district in the country.
- Research and surveys on drug abuse at local as well as national level should be conducted to know the exact magnitude of the problem, so that timely intervention can be done. Information regarding substance abuse should be included in the academic text books so that the students can refrain themselves from drug abuse; as well as disseminate the information to the general population.

## References

1. Saah T. The evolutionary origins and significance of drug addiction. *Harm Reduct. J.* 2005; 2: 8.
2. Substance Abuse, Drugs and Addictions: Guidebook. Aide Medical International, UNHCR, 09 September 2009.
3. Ray R. National survey on extent, pattern and trends of drug abuse in India. Ministry of Social Justice and Empowerment and United nations office on drug and crime regional office for South Asia, 2004.
4. Patel DR, Greydanus DE. Substance Abuse: a Paediatric Concern. *Indian J. Pediatr.* 1999; 66:557-67.
5. United Nations office on drugs and crime .project title: national survey on extent, patterns and trends of drug abuse in India. 2003.
6. Juyal R, R. Bansal, S. Kishore , K.S. Negi , R. Chandra , J. Semwal. Substance use among intercollege students in District Dehradun. *Indian J. Community Med.* October-December, 2006; 31(4):252-254.
7. Ningombam S, Hutin Y, Murhekar MV. Prevalence and pattern of substance use among the higher secondary school students of Imphal, Manipur, India. *Natl. Med. J. India.* 2011 Jan-Feb; 24(1):11-5.
8. Abdulmalik J, Omigbodun O, Beida O, Adedokun B. Psychoactive substance use among children in informal religious schools (Almajiris) in northern Nigeria. *Ment. Health Relig.Cult.*2009; 12(6):527-542.
9. Saxena V, Saxena Y, Kishore G, Kumar P. A study on substance abuse among school going male adolescents of Doiwala Block, District Dehradun. *Indian J. Public Health.* 2010; 54(4):197-200.
10. Sarangi L, Acharya H P and Panigrahi O P. Substance Abuse among adolescents in Urban Slums of Sambalpur. *Indian J. Community Med.* 2008 October; 33(4): 265-267.
11. Singh V, Pal HR, Mehta M, Dwivedi SN, Kapil U. Pattern of tobacco use among school children in National Capital Territory (NCT). *Indian J. Pediatr.* 2007 Nov; 74 (11):1013-20.
12. Kapil U, Goindi G, Singh V, Kaur S, Singh P. Consumption of Tobacco, Alcohol and Betel Leaf among school children in Delhi, *Indian J. Pediatr.* November 2005; 72:993.
13. Patel S, Shah R, Pati H, Gandhi P, Bhatt S, Venkur GK. Awareness and use of substances among high school students. *Indian J. Psychiatry.* April 1998; Vol. 40 Supplement.
14. Ahmadi J and Hasani M. Prevalence of substance use among Iranian high school students. *Behaviors.* March 2003; 28(2):375-379.
15. Ray R. Current extent and pattern of Drug abuse. In; *Drug Demand Reduction report.* New Delhi; UNDCP Regional Office for South East Asia 1998:5-36.
16. Verma VK, Dang R. Non-medical use of drugs amongst school and college students. *Indian J. Psychiatry* 1979; 2:228-234.
17. Mohan D, Thomas MG, Sethi HS, Prabhu GG . Prevalence and patterns of drug use among high-school students: a replicated study. *Bull Narc.* 1979 Jul-Dec; 31(3-4):77-86.
18. Yisa IO, Lawoyin TO, Fatiregun AA, Emelumadu OF . Pattern of substance use among senior students of command secondary schools in Ibadan, Nigeria. Department of Epidemiology, Medical statistics and environmental Health, Faculty of Public Health, College of Medicine, University of Ibadan, Ibadan, Nigeria. *Niger J. Med.* 2009 Jan-Mar; 18 (1): 98-102.
19. Singh H, Maharaj HD, Shipp M. Pattern of substance abuse among secondary school students in Trinidad and Tobago. *Community Services, Ministry of Health, Trinidad, West Indies. Public Health.* 1991 Nov; 105(6):435-41.
20. Ferigolo M, Barbosa FS, Arbo E, Malysz AS, Stein AT, Barros HM. Drug use prevalence at FEBEM, Porto Alegre. *Brasil. Rev. Bras. Psiquiatr.* 2004 Mar; 26(1):10-6.
21. Amiri ZM, Shakib AJ, Moosavi AK Prevalence and risk factors of ecstasy use among college students in Astara, Islamic Republic of Iran Department of Community Medicine, School of Medicine, Guilan University of Medical Sciences, Rasht, Islamic Republic of Iran. *East Mediterr. Health J.* 2009 Sep-Oct; 15(5):1192-200.
22. Kapoor SK, Anand K, Kumar G. Prevalence of tobacco use among school and college going adolescents of Haryana. *Indian J. Pediatr.* 1995 July-Aug; 62(4):461-6.
23. Tsering D, Pal R. Role of family and peers in initiation and continuation of substance use. *Indian J. Psychol. Med.*2009; 31(1):30-34.

24. Narain R, Sardana S, Sanjay Gupta S, Sehga A. Age at initiation & prevalence of tobacco use among school children in Noida, India: A cross-sectional questionnaire based survey. Indian J. Med. Res. March 2011; 133:300-30.
25. Muttappallymyalil J, Sreedharan, B Divakaran. Smokeless tobacco consumption among school children. Indian J. Cancer. 2010; 47(5):19-23.
26. Arditti J, Spadari M, Camprasse MA, Dalecky C, Bourdon JH. Abuse of licit and illicit psychoactive substances in children and teenagers in the PACA Region (Southeastern France). Therapie. 2004 Nov-Dec; 59(6):595-7.
27. Poulin C, Elliott D. Department of Community Health and Epidemiology. Dalhousie University. Student Drug Use Survey in the Atlantic Provinces 2007. Atlantic Technical Report.

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