Analyzing Adolescent Risk-Taking Behaviour in India: Findings from a large-scale survey[€]

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Abstract

This paper tries to examine the key risk-taking behaviours which includes chewing of tobacco, smoking, and alcohol consumption focusing on adolescents (age 10-24) in India by exploring the individual-level data of the household sample from National Family Health Survey (1998-99). The major objective of the study is to identify the familial and individual characteristics of adolescents those engage in risk-taking behaviours. Logistic regression analysis has been done to examine the covariates of adolescent's risk-taking behaviours such as out-of-school, working status, living single or with female-headed households and other socio-economic variables. The findings show that adolescents who are working, living single, belonging to lower SLI, less educated and not related with head of the households are more likely to indulge in risk-taking behaviours. This paper also highlighted the effects of the risk-taking behaviours on health of the adolescents and finds an adverse effect.

Key words: *Risk-taking behaviours, tobacco chewing, smoking, drinking alcohol, and logistic regression*

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1. Introduction

Adolescence is a transition period from childhood to adulthood spanning ages 10 to 19 years. Currently, the world's adolescent population is 1.2 billion. Eighty-seven percent of these adolescents live in developing countries. This unprecedented number of adolescents will ensure continued population growth for decades to come, even as family sizes get smaller. An increased world population brings its adolescents increased poverty, decreased access to health-care services, decreased access to education and decreased economic opportunity.

Adolescence is a complex but natural process. Both the adolescent and the majority of adults surrounding him/her are unaware of the process itself and all its manifestations. Adolescents often adopt incorrect attitudes and behavioral patterns than can lead to both social problems and ill health. Adolescents' risky behaviours often result from their inadequate knowledge of and experience with such behaviours and their lack of understanding of the risks involved. Moreover, their cognitive limitations make it difficult for them to learn from the experiences of others.

Adolescents represent an age range marked by rapid physical and behavioral changes. Habits, good and bad, are often formed in this age range, which impact the health and social well being of adolescents throughout their lives. It is therefore important to understand adolescent behaviour and factors that influence their behaviour. The International Conference on Population and Development (ICPD) held in Cairo in 1994 identified adolescents as a distinct group in need of targeted health programmes and services. Although many developing-country governments recognize adolescents as a group that needs special attention, this recognition rarely translates into concrete programmes that address adolescent risk-taking behaviors. As a group, adolescents are often overlooked due to a lack of understanding of their needs. This is partly due to lack of adequate data on youth behaviors, especially behaviors such as sexuality, smoking, drinking, and illicit drug use, which are either social taboos or illegal in most societies. Even when some data on youth are available, they are often grouped into broader age groups, hiding enormous heterogeneity and widely differing needs. Data on such behaviors are typically not gathered in national population censuses, so one has to rely on surveys.

Early initiation of smoking and drinking are well known to have both immediate and long-term adverse health and social consequences (CDC 1994; Gruber et al. 1996; WHO 1997). For these reasons, substance uses during adolescence are regarded as risk-taking behaviour. Limited studies on substance use indicate that the prevalence of these risk-taking behaviours among adolescents is increasing in Asian countries (Tan 1994; Corraro et al. 2000). In order to formulate and implement effective adolescent health policies and programmes it is essential that the prevalence of adolescent risk-taking behaviour and the factors associated with them are identified.

Several studies (mostly in the United States of America) have found that a range of community, family and individual characteristics affect substance use among adolescents (Neumark-Sztainer 1996; Blum and Rinehart 1997; Resnick 1997; Jessor 1998; Jessor et al. 1998; Kirby 2001). Adolescent risk-taking behaviour is more common in communities that have more permissive norms than in other communities. At the family level, adolescents who spent their childhood in two-parent families and who have close relationships with their parents are more likely than others to avoid risk-taking behaviour. A high level of parents' education is often found to be associated with low likelihood of risk-taking behaviour. It is likely that parents with high levels of education are better able to provide appropriate guidance for their children's behaviour than other parents, resulting in lower level of risk-taking among their children. In developing countries, however, a higher level of parents' education, through better economic conditions, may be associated with higher prevalence of substance use during adolescence among their children. At the individual level, physical maturity is found to be associated with a desire to engage in risk-taking behaviour. In addition, aspirations for a higher level of education, high level of self-esteem and strong religious belief are found to be associated with low level of risk-taking. In general, risk-taking behaviour during adolescent years, such as substance use is found to have similar risk and protective factors. Furthermore, the initiation of premarital sex during adolescence is found to be much more common among those who have initiated substance use.

Tobacco smoking (both active and passive) and tobacco chewing (in the case of India, both chewing raw tobacco and adding it to *paan* or *paan masala*) are predominant causes of current

and future morbidity and mortality worldwide. Globally, tobacco causes some three million people to die prematurely each year and this number is increasing rapidly. According to a WHO estimate in 1997, some 500 million people will be killed by tobacco by 2025, representing about 16 percent of all deaths. Tobacco consumption, which used to be a major problem in the developed countries, is increasingly becoming a problem of the developing countries, with no exception to India. According to R. Peto from Oxford University, "In most of the countries the worse is yet to come. If the current pattern persists, then by the time these young smokers of today reach middle or old age there will be 10 million deaths a year from tobacco – at the rate of one death every three seconds." Most common risk-taking behaviours among Indian youth include tobacco smoking (both *bidis* and *cigarettes*), tobacco chewing (directly, with *paan*, or as *paan masala*), and drinking alcohol. There is evidence that tobacco consumption is increasing in India, particularly among the adolescents and young adults. Given India's large and growing youth population as well as growing tobacco consumption rates, India is likely to experience very heavy losses to both human life and its economy due to tobacco consumption.

Alcohol use is also on the rise in India. Due to rapid changes in media exposure and lifestyle, alcohol drinking is becoming rampant among the youths. Although, health impacts of alcohol consumption are not as straightforward as that of tobacco smoking, there is enough evidence to suggest that heavy drinking leads to liver damage and other health problems, as well as a host of social, physical, emotional, and financial problems for the family. There is evidence that alcohol consumption and other substance abuse lead to increased sexual risk-taking.

Most of the studies on substance use among Asian adolescents are based on special groups of youth or small samples of youth in limited geographic locations (Sittirai et al. 1992; Tan 1994). Only a handful of studies have reported on these behaviours at national levels (Choe and Raymundo 2001; Podhisita et al. 2001). In Indian scenario there is dearth of the representative study therefore this paper is an attempt to explore the adolescent risk-taking behaviour at national level.

2. Objectives

The major objective of the present study is to identify familial and individual characteristics of adolescents those engaged in risk-taking behaviours like tobacco smoking, tobacco chewing, and drinking alcohol. However, specific objective are as follow:

1. To know the differential in the familial and individual characteristics in the risk-taking behaviours of the adolescents by their age.

2. To investigate the covariates of the risk-taking behaviours among adolescents.

3. To examine the health status of adolescents in terms of specific morbidity conditions according to the risk-taking behaviours.

3. Data and Methods

A recently conducted National Family Health Survey (NFHS-2, 1998-99) collected data on some of the key risk-taking behaviors, like tobacco smoking, alcohol consumption, and chewing of tobacco and *paan masala*. NFHS-2 is a nationally representative sample covering more than 90,000 households in India and some 500,000 persons of all ages in those households. This is the first time that such data are gathered in India at the national level and it provides a unique opportunity to understand these behaviors.

The information about smoking and drinking was gathered in the NFHS-2 household questionnaire. The household head or some other knowledgeable adults in the household reported for the each household member. Because the household respondent may not be aware of smoking and drinking behaviors of all household members, it is possible that some of these behaviors are underreported in the survey. The survey also collected detailed information on household members about their sex, marital status, education and work status, and household socioeconomic characteristics, such as religion, caste and standard of living, and some indicators

of family characteristics, which gives a unique opportunity to analyze their effect on adolescent risk-taking behaviors. The study used the household data focusing on the members of age 10-24 years adolescent.

For the purpose of analysis the age group 10-24 years has been divided into three categories- 10-14 years known as early adolescents, 15-19 years known as middle adolescents and 20-24 years known as late adolescents or early youths. Both bi-variate and multivariate statistical methods have been used. In the multivariate analysis, whether a person engages in a specific risk-taking behavior e.g., drinks alcohol or does not drink alcohol has been taken as the dependent variable and logistic regression analysis has been done to examine its covariates.

4. Results and Discussion

4.1.1 Risk-taking behaviours by socio-economic characteristics of the adolescents

Table 1 presents tobacco chewing, smoking, drinking and any of these risk-taking behaviours among adolescents according to selected socio-economic characteristics. Considering religion, tobacco-chewing habits have been found highest among 'other' religion in each age group of adolescents. However, adolescents belonging to Christian community have been found least to be habitual of tobacco chewing. Smoking habit has been found highest among adolescents belonging to Sikh religion followed by Muslims. Again, adolescents belonging to Christian community have been found least to be habitual of smoking. But drinking habit has been found to be highest among adolescents belonging to Christian community. Further, adolescents belonging to Muslim community have been found least habitual of drinking. Overall, any risk behaviour has been found highest among adolescents of each age group belonging to 'other' religion followed by Sikhs. However, adolescents belonging to Christian community have been found least habitual of any risk-taking behaviour. Any risk-taking behaviour of the adolescents belonging to Hindu and Muslim religion has been found almost similar.

Caste is an important background characteristic in Indian scenario, which governs several

habitual and behavioural aspects of an individual. In this study also, caste emerged as an important characteristics governing the risk behaviour of the adolescents. Adolescents of each age group belonging to scheduled tribes has been found to be highest involved in the habit of tobacco chewing, smoking and drinking alcohol, followed by scheduled castes, other backward class and 'other' castes. Thirty-two percent of late adolescent scheduled tribes has been found to be involved in any risk-taking behaviour followed by 20 percent of scheduled caste, 16 percent of other backward class and 15 percent of 'other' caste. Almost similar patterns have been found in case of early adolescent and middle adolescents.

Standard of living index (SLI), which shows the economic condition of the household have also emerged as an important characteristics in the risk-taking behaviour of the adolescents. Lower the SLI higher the risk-taking behaviour of each type (tobacco chewing, smoking and drinking alcohol) among adolescent have been found. Nine percent of early adolescents belonging to lower SLI have been found chewing tobacco compared to five percent from medium SLI and only two percent belonging to higher SLI. A similar pattern has been found in case of early and late adolescents also. Considering any risk-taking behaviour it is found that 12 percent of the middle adolescents belonging to lower SLI are involved in any risk-taking behaviour compared to eight percent of medium SLI and only three percent of higher SLI. Further, 26 percent of late adolescent belonging to lower SLI has been found to be indulge in any risk-taking behaviour than 17 percent of medium SLI and only nine percent of higher SLI.

Thus, the socio-economic characteristics shows that adolescents belonging to 'other' or Sikh religion, scheduled tribes or scheduled caste and from lower standard of living are more indulge in risk-taking behaviours such as tobacco chewing, smoking and drinking alcohol.

4.1.2 Risk-taking behaviours by individual characteristics of the adolescents

Table 2 presents tobacco chewing, smoking, drinking and any of these risk-taking behaviors among adolescents according to selected individual characteristics. According to the sex of individual, a clear divide has been found in the risk-taking behaviour of adolescents of each age

group. Females are found far behind than males. Thirteen percent of middle adolescent male have been found to be involved in any risk-taking behaviour than only three percent of female adolescents. Further, 30 percent of late adolescent male are found to be involved in risk-taking behaviour than only five percent female adolescents.

Marital status among early adolescents makes significant differential in all types of risk-taking behaviour than middle and late adolescents. It is found that seven percent of ever-married early adolescents chews tobacco than one percent never married. However, the differential in chewing tobacco among middle and late adolescents according to marital status is less. An almost similar pattern has been seen in case of smoking and drinking alcohol also. When looked into any risk behaviour, eight percent of early ever-married adolescent have been found to indulge into any risk-taking behaviour compared to only two percent never married early adolescents. Again, differential in the risk-taking behaviour according to marital status among middle and late adolescents is quite less (9 percent vs. 8 percent and 18 percent vs. 17 percent, respectively). It shows that adolescents who got married in the young age indulge higher in the risk-taking behaviour of all types.

School is an important social institution for learning the healthy social and personal behaviours and habits. Considering educational status, it is found that all types of risk-taking behaviour are more among illiterate adolescents of each age group than educated ones. Further, it is found that a higher proportion of early adolescents who are out of school are chewing tobacco more than adolescents who are going to school (3 percent vs. 0.6 percent). Also, a similar pattern with more intensity of chewing tobacco has been found among middle adolescents (8 percent among who are not going to school than 2 percent who are going to school). In case of other risk-taking behaviours such as smoking and drinking, also a similar pattern has been noticed.

Working status is an important dimension, which makes an impact on an individual's behaviour. It has emerged from the study that a higher proportion of working adolescents of each age group are indulged in all types of risk-taking behaviour than not-working adolescents. Five percent of working early adolescents are found to chew tobacco than less than one percent among not-

working early adolescents. Further, 14 percent of working middle adolescents are found to chew tobacco than only three percent among the not working. Almost a similar pattern has been found in other risk-taking behaviours according to working status. It may be because of the fact that working environment of such adolescents may enforce them into indulging in risk-taking behaviours.

4.1.3 Risk-taking behaviours by physical and social environment of the adolescents

Physical and social environment play an important role in the individual's behaviour. Table 3 presents tobacco chewing, smoking, drinking and any of these risk-taking behaviours among adolescents according to selected physical environment. It is also reflected in the finding that as we move from larger city to smaller town and further to countryside, the propensity of risk-taking behaviour increases among adolescents of all age groups. About four percent of middle adolescents residing in larger city have been found to indulge in any risk-taking behaviour, which increases to six percent among adolescents of small city and town, and further to nine percent among adolescents of countryside. Similarly, 13 percent of late adolescents have been found to indulge in any risk-taking behaviour in city or town compared to 20 percent in countryside.

In the urban centers, slum areas because of its physical and social settings, are supposed to aggravate the risk-taking behaviours among adolescents. Here also, it is found that any risk-taking behaviour among slum adolescents of middle age group is higher than non-slum adolescents (7 percent vs. 3 percent). Similarly, among late adolescents also, 16 percent of adolescents residing in slum areas are found to indulge in any risk-taking behaviour than seven percent of adolescents residing in non-slum area.

Different types of house represent differences in physical and social environment, which may affect the behaviour of the individual residing in those dwellings. The study also shows that risk-taking behaviour among adolescents differs significantly according to types of house. Each types of risk-taking behaviour are found to be highest among adolescents of all age groups residing in

kachcha houses compared to *semi-pucca* houses and *pucca* houses. For example, four percent of middle adolescents residing in *pucca* houses are found to indulge in any risk-taking behaviour which increases to nine percent among those who resides in *semi-pucca* houses and 11 percent among those who resides in *kachcha* houses. Similar pattern has been found in case of early and late adolescents also.

4.1.3 Risk-taking behaviours by living arrangement of the adolescents

Living arrangement in the household depicts several behvioural aspects of residing members. In this study several possible living arrangements have been explored such as, composition of adults in the household, living single or not, relationship with the head of the household and sex of the household head. Table 4 presents tobacco chewing, smoking, drinking and any of these risk-taking behaviors among adolescents according to their living arrangements.

Looking into the composition of adults in the household, it is found that where only one adult or unrelated adults resides in the household, risk-taking behaviour of every type are comparatively more than other composition of adults. However, risk-taking behaviour is found to be least among adolescents who reside in household with three or more related adults. Twenty-three percent of middle adolescents who resides in households with one adult are found to indulge in any risk-taking behaviour compared to 12 percent adolescents residing in the household with unrelated adults and eight percent adolescents who resides with three or more related adults. Almost similar pattern is found in case of early and late adolescents. Thus, it emerges from the study that because of lack of related adults or less number of adults in the households, proper care and socialization of the adolescents is not happening and as a result adolescents of those households are indulging in more risk-taking behaviours.

The propensity of indulging in risk-taking behaviour gets aggravated when the adolescent resides single. Twenty-one percent adolescent of middle age-group who lives single are found to chew tobacco compared to only six percent who do not live single. In case of smoking this gap is noticed as 18 percent vs. two percent and for drinking alcohol the gap is found to be 11 percent

and two percent. Similar pattern with a high prevalence has been found in case of late adolescents according to different risk-taking behaviours. Considering risk-taking behaviours of any types among middle-aged adolescents, 29 percent of adolescent who resides single are found to indulge in any type of risk-taking behaviour than only eight percent of adolescent who do not resides single. In case of late adolescents, this gap has been found to be 41 percent vs. 18 percent. Thus, the above discussion brings out the fact that adolescents who resides single are more indulging in high risk-taking behaviours.

Relationship with the head of the household has been found as an important aspect to determine the risk-taking behaviour among adolescents. Adolescent not related with the head of the household has been found to be most indulged in risk-taking behaviour compared to adopted and related ones. In case of middle adolescents, 18 percent not related with the head of the household are found to chew tobacco compared to seven percent of adopted and six percent of related ones. Smoking behaviour has been found similar to chewing tobacco. However, in case of drinking, adopted adolescents of middle age group has been found to indulge more in such behaviours than not related and related (7 percent, 5 percent and 2 percent, respectively). Considering any risk-taking behaviour, also a higher proportion of not related adolescent of each group have been found to indulge in risk-taking behaviour than adopted or related adolescents.

In the present study, it has also been explored whether sex of the head of the household matters in the risk-taking behaviour of adolescent or not. The results shows that sex of the head of the household does matter in case of early and middle aged adolescent's risk-taking behaviour to some extent whereas for the late adolescents it does not. About 1.8 percent of early adolescents residing in female-headed households have been found to indulge in risk-taking behaviour than 1.6 percent residing in male-headed households. Among the middle adolescents also, almost a similar pattern has been noticed (8.5 percent vs. 7.8 percent). It may be because of the facts that in Indian scenario, up to a certain age, adolescents in the female-headed household do not understand their responsibility and get indulge in risk-taking behaviours. But crossing the teen age, they do understand about their role in the family and minimize their risk-taking behaviours.

Thus, the above discussion about risk-taking behaviour of the adolescents according to different dimensions, it emerges that several background characteristics are associated with risk-taking behaviour of the adolescents. Living arrangement, economic and working status of the adolescents has been found as most important characteristics affecting their risk-taking behaviour. Also risk-taking behaviour significantly differs according to adolescent's religion, caste and physical environment where they reside.

4.2 Covariates of the risk-taking behaviours

We have seen in the earlier discussion about the different characteristics and their association with the risk-taking behaviour of the adolescents. However, to know the adjusted effects of a particular factor controlling for others, logistic regression model have been applied. Table 5 presents logistic regression results showing adjusted effects (odds ratio-OR) of selected background characteristics on any risk-taking behaviors of adolescents by age in different models. Model-I shows results for early and middle aged adolescent i.e. 10-19 years and model-II for late adolescent i.e. 20-24 years.

Considering model-I, religion, caste, SLI, marital status, working status, education, residence, relationship with the head of the household and living arrangements come out as significant factors in the risk-taking behaviour of the adolescents in the age group 10-19 years. Adolescents belonging to 'other' religion as well Muslims are found to be almost 1.3 times more likely to indulge in risk-taking behaviours with reference to Hindus. However, adolescents belonging to Christian community are significantly less likely (OR-0.57) to indulge in risk-taking behaviour than Hindu. Looking into the caste, adolescents belonging to scheduled tribes are found to be two times more likely to indulge in risk-taking behaviour with reference to scheduled caste. However, adolescents belonging to other backward class and 'other' caste are found to be significantly less likely (OR-0.79 and 0.87, respectively) to indulge in risk-taking behaviour than scheduled tribes. Standard of living has been found as an important covariate. Adolescents belonging to higher SLI are found to be significantly less likely (OR-0.47) to indulge in risk-taking behaviour with reference to adolescents belonging to lower SLI.

It is interesting to find out that marital status of the adolescent has a significant impact on their risk-taking behaviour. Ever-married adolescents are found 1.6 times more likely to indulge in risk-taking behaviour than never married adolescents. The burden associated with marriage in the lower age group may be a reason for such risk-taking behaviour.

Further, working status is found to aggravate the risk-taking behaviour of the adolescents. The likelihood of risk-taking behaviour among working adolescents has been found to be almost seven times higher than non-working adolescents. Place of residence also have an impact on risk-taking behaviour of the adolescents. Rural adolescents are found to indulge slightly more in the risk-taking behaviour than their urban counterparts.

Living arrangements have been found to have a profound impact in the risk-taking behaviour of the adolescents. Adolescents residing alone in the household are found to be 3.2 times more likely to indulge in the risk-taking behaviour than adolescents not residing alone. Further, relationship with the head of the household shows significant impact in the risk-taking behaviour of the adolescents. Adolescents who are adopted or not related with the head of the households are significantly more likely (OR-1.82 and 2.24, respectively) to indulge in the risk-taking behaviour with reference to related adolescents. However, sex differential in the headship has not been turned out as a significant factor for risk-taking behaviour of the adolescents in the age group 10-19 years.

In model-II for late adolescents, also, religion, caste, SLI, marital status, working status, education, residence, relationship with the head of the household and living arrangements come out as significant factors. Adolescents belonging to ‘other’ religion as well Muslims are found to be almost 1.3 times more likely to indulge in risk-taking behaviour with reference to Hindu as in model-I. However, late adolescents belonging to Christian community are not found to be significantly less likely to indulge in risk-taking behaviour than Hindu as in model-I. Thus it illustrates that after the teen-age, adolescent from Christian community also gets indulge in the risk- taking behavior as Hindus. Caste and standard of living of the late adolescents shows almost similar pattern like model-I.

It is interesting to find out that marital status, which was found as a significant predictor for the risk-taking behaviour among adolescent in model-I being the OR of 1.6; however, again it is found as significant in model-II but OR is quite less i.e. 1.13. It proves the argument of more burdens associated with marriage in the teen age than in the late adolescent that results into risk-taking behaviour. Working status of the late adolescents shows almost similar pattern like model-I, but the odds ratio has been found to be little less.

Living arrangements again have been found to have a significant impact in the risk-taking behaviour of the late adolescents. Adolescents residing alone in the households are found to be 2.3 times more likely to indulge in the risk-taking behaviour than adolescents not residing alone. Relationship with the head of the household is also found to have significant impact in the risk-taking behaviour of the late adolescents. Adolescents who are not related with the head of the households are significantly more likely (OR-2.00) to indulge in the risk-taking behaviour with reference to related adolescents. But, adopted adolescent in this model has not been found significant which explain that adoption does not make a significant impact on risk-taking behaviour among the late adolescents. Sex differential in the headship has been found as a significant factor for risk-taking behaviour among the late adolescents. Adolescent who resides under female headship are found to be less likely (OR-0.89) to indulge in the risk-taking behaviour than adolescent who resides under male headship. This demonstrates our arguments that adolescents in the female-headed household after crossing the teen age understands about their role in the family and minimizes their risk-taking behaviour.

4.3 Health status of the adolescents according to their risk-taking behaviours

Different risk-taking behaviours might have an adverse impact on the health of the adolescents. Effect of each of the risk-taking behaviours such as tobacco chewing, smoking, and drinking alcohol on the health of adolescents by age group have been explored and presented in Table 6. Health status has been seen in terms of selected morbidity conditions like asthma, TB and jaundice.

Considering tobacco chewing among the adolescents of each age group, a significant differential

in the prevalence of asthma, TB as well as jaundice has been noticed according to chewing and not chewing of tobacco. In case of middle adolescents, 15 per thousand of them have been found asthmatic if chewing tobacco compared to eight if not chewing tobacco. In the same age group, eight per thousand has been found to suffer from TB if chewing tobacco compared to only two if not chewing tobacco. Further, in the same age group, 30 per thousand of adolescents are found to suffer from jaundice if chewing tobacco compared to only 14 if not chewing tobacco. An almost similar pattern has been found in the prevalence of the above morbidity conditions among early as well as late adolescents according to chewing and not chewing of tobacco.

Considering smoking among the adolescents of each age group, a significant differential in the prevalence of asthma, TB as well as jaundice has also been noticed according to smoking and not smoking. In case of middle adolescents, 15 per thousand of them have been found asthmatic if smoking compared to eight if not smoking. Further, in the same age group 32 per thousand of adolescents are found to suffer from jaundice if smoking compared to only 15 if not smoking. An almost similar pattern has been found in the prevalence of the above morbidity conditions among early as well as late adolescents according to smoking and not smoking behaviour.

Considering drinking alcohol among the adolescents of each age group, a significant differential in the prevalence of asthma, TB as well as jaundice has also been noticed according to drinking and not drinking. In case of middle adolescents, 14 per thousand of them have been found asthmatic if drinking compared to eight if not drinking. In the same age group, five per thousand has been found to suffer from TB if drinking compared to only three if not drinking. Further, in the same age group, 27 per thousand of adolescents are found to suffer from jaundice if drinking compared to only 15 if not drinking. An almost similar pattern has been found in the prevalence of the above morbidity conditions among early as well as late adolescents according to drinking and not drinking behaviour.

Considering the health status of the adolescents according to any risk-taking behaviour in each age group, a significant differential in the prevalence of asthma, TB as well as jaundice has been noticed according to indulging and not indulging in any risk-taking behaviour. In case of middle

adolescents, 15 per thousand of them have been found asthmatic if indulged in any risk-taking behaviour compared to eight if not indulged. In the same age group, six per thousand has been found to suffer from TB if indulged in any risk-taking behaviour compared to only two if not indulged. Further, in the same age group 31 per thousand of adolescent are found to suffer from jaundice if indulged in any risk-taking behaviour compared to only 14 if not indulged. An almost similar pattern has been found in the prevalence of the above morbidity conditions among early as well as late adolescents according to indulging and not indulging in any risk-taking behaviour.

Thus from the above discussion it has emerged that prevalence of all the morbidity condition has been found quite higher among adolescent if indulge in risk-taking behaviour than not indulge. The prevalence of all types of morbidity has been found to be almost double among the adolescent habitual of risk-taking behaviour than their counterparts. Thus there is a serious health impact of the risk-taking behaviour.

5. Summary and Conclusions

The present study tries to identify the different familial and individual characteristics of adolescents and youths that engage in risk-taking behaviours like tobacco smoking, tobacco chewing, and drinking alcohol. Adolescents has been divided into three categories according to their age such as early adolescents, middle adolescents and late adolescents for providing a vivid and better picture of their risk-taking behaviour in the different age groups. Risk-taking behaviours have been explored by their socio-economic characteristics, physical and social environment, and by their living arrangements. The health status of the adolescents has also been examined according to the risk-taking behaviours of the adolescents. Lastly the study tries to find out the important covariates influencing the risk-taking behaviour of the adolescents.

Difference in the risk-taking behaviour has been found according to age group of the adolescents. Females are far behind than males in each risk-taking behaviour. Marital status among early adolescents makes significant differential in all types of risk-taking behaviour. Adolescents who got married in the young age found to be higher indulging in the risk-taking behaviour of all types. It is found that all types of risk-taking behaviour are more among illiterate adolescents of each age group than educated ones. A higher proportion of early adolescents who

are out of school are chewing tobacco than adolescents who are going to school. It has emerged from the study that a higher proportion of working adolescents of each age group are indulged in all types of risk-taking behaviour than not-working adolescents. Risk-taking behaviour also differs according to the place of residence of the adolescents. The initiation of risk-taking behaviour further found to be positively associated with most of the indicators of transition to adulthood such as leaving school and leaving the parental home. The propensity of indulging in risk-taking behaviour gets aggravated when the adolescent resides single. Adolescent not related with the head of the household has been found to be most indulged in risk-taking behaviour compared to adopted and related ones. The results show that sex of the head of the household does matter in case of early and middle aged adolescent's risk-taking behaviour to some extent whereas for the late adolescents it does not. A significant differential in the prevalence of asthma, TB as well as jaundice among the adolescents in each age group has been noticed according to indulging and not indulging in any risk-taking behaviour.

A few suggestions regarding adolescent health programmes and policies can be derived from the results of the analysis. Adolescents as well as communities as a whole need to be better informed about the serious negative health consequences of smoking and drinking. School education programmes concerning substance use should begin at an early age, before a significant proportion of adolescents begin to leave school. Community-based health education programmes, targeting community leaders and parents, need to be developed to counter the high level of tolerance towards adolescent smoking and drinking in some communities. For this, the potential roles of mass media and community-based organizations need to be explored more vigorously.

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Table 1: Tobacco chewing, drinking, smoking and any risk behaviors among adolescents according to selected socio-economic characteristics, India, 1998-99

Socio-economic characteristics	Tobacco chewing			Smoking			Drinking			Any risky behaviour		
	Age group			Age group			Age group			Age group		
	10-14	15-19	20-24	10-14	15-19	20-24	10-14	15-19	20-24	10-14	15-19	20-24
Religion												
Hindu	1.2	6.0	12.4	0.2	2.3	7.0	0.4	1.6	4.8	1.6	7.9	17.6
Muslim	1.0	5.2	11.8	0.3	3.3	8.0	0.0	0.4	0.9	1.3	7.8	17.6
Sikh	0.8	6.3	11.1	0.2	3.3	9.3	0.5	2.5	7.1	1.4	9.2	19.5
Christian	0.1	1.1	3.6	0.1	0.3	2.4	0.1	2.0	8.5	0.1	3.0	11.0
Others	1.3	7.4	15.8	0.2	1.0	3.4	1.3	4.3	5.6	2.7	9.8	19.9
Caste/tribes												
Scheduled caste	1.4	7.0	14.2	0.3	3.1	9.0	0.2	1.7	5.9	1.7	9.2	20.4
Scheduled tribe	2.8	12.4	21.1	0.5	3.2	9.8	2.5	7.0	13.9	5.1	17.9	31.5
Other backward class	0.9	5.1	11.0	0.2	2.0	6.3	0.3	1.2	3.8	1.3	6.7	15.6
Other	0.8	4.5	10.1	0.2	2.0	5.8	0.0	0.6	2.3	0.9	6.0	14.5
Standard of living												
Low	1.8	9.2	17.2	0.4	3.5	11.1	0.7	2.7	7.5	2.6	12.1	25.5
Medium	1.0	5.4	12.1	0.1	2.4	6.8	0.3	1.4	3.8	1.3	7.6	17.4
High	0.2	2.2	6.4	0.0	0.7	3.0	0.0	0.4	2.0	0.2	2.8	9.0

Table 2: Tobacco chewing, drinking, smoking and any risk behaviors among adolescents according to selected individual characteristics, India, 1998-99

	Tobacco chewing			Smoking			Drinking			Any risky behaviour		
	Age group			Age group			Age group			Age group		
Selected individual characteristics	**10-14**	**15-19**	**20-24**	**10-14**	**15-19**	**20-24**	**10-14**	**15-19**	**20-24**	**10-14**	**15-19**	**20-24**
Sex												
Male	1.5	9.4	20.3	0.4	4.4	13.8	0.4	2.4	7.7	2.1	12.8	30.1
Female	0.8	2.1	4.3	0.0	0.2	0.6	0.3	0.6	1.1	1.0	2.7	5.4
Marital Status												
Never married	1.1	6.8	12.1	0.2	2.3	6.6	0.4	1.4	3.7	1.6	7.6	16.9
Ever Married	7.1	5.8	12.2	1.1	2.6	7.4	2.1	2.3	4.9	8.1	9.3	18.0
School Going												
No	2.9	7.5	NA	0.8	3.2	NA	0.8	2.0	NA	3.8	10.1	NA
Yes	0.6	2.0	NA	0.1	0.4	NA	0.3	0.5	NA	0.9	2.6	NA
Education												
Illiterate	2.7	8.6	13.7	0.7	4.1	8.4	0.8	3.0	6.0	3.5	12.2	20.5
Literate, < middle school complete	0.8	7.6	15.5	0.1	3.2	10.1	0.3	1.8	5.4	1.2	10.1	23.0
Middle school complete	0.7	4.7	13.9	0.1	1.4	8.0	0.3	0.9	4.7	0.9	6.0	19.7
High school complete and above	NA	2.4	7.8	NA	0.9	3.4	NA	0.5	2.1	NA	3.1	10.5
Working Status												
No	0.8	2.9	5.2	0.1	0.8	1.5	0.3	0.7	1.2	1.2	3.8	6.6
Yes	5.0	13.5	19.9	1.6	6.6	13.2	1.1	3.6	7.9	6.5	18.5	29.8

Note: NA – Not applicable

Table 3: Tobacco chewing, drinking, smoking and any risk behaviors among adolescents according to selected Physical Environment, India, 1998--99

Physical Environment Characteristics	Tobacco chewing			Smoking			Drinking			Any risky behaviour		
	Age group			Age group			Age group			Age group		
	10-14	15-19	20-24	10-14	15-19	20-24	10-14	15-19	20-24	10-14	15-19	20-24
Place of residence												
Capital, large city	0.4	3.7	9.8	0.1	0.8	4.3	0.0	0.6	2.8	0.4	4.2	12.7
Small city	0.5	5.0	9.6	0.0	1.1	3.6	0.1	0.6	2.6	0.6	5.7	12.4
Town	0.8	4.8	9.8	0.1	1.3	4.2	0.1	0.5	2.2	0.8	5.7	12.8
Countryside	1.3	6.3	13.2	0.3	2.9	8.3	0.5	1.9	5.2	1.9	8.9	19.6
Slum Area												
No	0.8	2.6	4.0	0.0	0.4	3.1	0.0	0.4	1.5	0.8	2.6	6.7
Yes	0.5	5.6	13.8	0.2	0.7	3.2	0	0.9	4.4	0.5	6.7	16.1
Type of House												
Pucca	0.4	3.0	7.4	0.0	1.2	4.1	0.1	0.5	2.3	0.4	3.9	10.9
Semi-*Pucca*	1.4	6.2	13.0	0.3	2.7	8.1	0.4	1.7	4.9	1.8	8.8	19.5
Kachha	1.6	8.4	16.8	0.3	3.3	9.3	0.7	2.4	6.1	2.3	11.2	23.2

Table 4: Tobacco chewing, drinking, smoking and any risk behaviors among adolescents according to living arrangement, India, 1998-99

Characteristics of living arrangement	Tobacco chewing Age group			Smoking Age group			Drinking Age group			Any risky behaviour Age group		
	10-14	15-19	20-24	10-14	15-19	20-24	10-14	15-19	20-24	10-14	15-19	20-24
Composition of adult in the household												
One adult	1.1	17.9	21.6	0.4	13.0	14.9	0.8	7.7	4.5	2.1	23.4	28.8
Two adults, opposite sex	1.1	8.9	12.8	0.3	3.5	9.3	0.4	2.8	6.5	1.6	12.2	20.1
Two adults, same sex	2.5	5.9	18.6	0.6	3.6	12.8	0.4	1.6	6.3	2.8	8.1	26.9
Three+ related adult	1.1	5.7	11.8	0.2	2.3	6.5	0.4	1.5	3.9	1.5	7.7	16.9
Unrelated adults	1.0	9.0	16.8	0.2	3.4	12.8	0.2	3.2	10.0	1.3	11.5	24.7
Living single												
No	1.2	5.8	12.1	0.2	2.4	7.0	0.4	1.5	4.3	1.6	7.9	17.5
Yes	1.2	21.1	30.7	0.2	17.5	26.5	0.4	10.5	8.8	1.6	28.6	41.2
Relationship with the head of the household												
Related	1.1	5.8	12.1	0.2	2.4	6.9	0.4	1.5	4.3	1.6	7.8	17.4
Not related	3.4	18.0	23.0	1.7	6.4	22.9	0.6	5.3	16.1	4.5	21.9	34.8
Adopted	2.6	6.7	15.4	0.0	1.7	7.7	0.0	6.8	15.4	2.7	15.0	30.8
Sex of the head of the household												
Male	1.1	5.8	12.2	0.2	2.3	7.1	0.4	1.5	4.4	1.6	7.8	17.6
Female	1.4	6.1	11.3	0.3	2.8	6.7	0.3	1.7	3.6	1.8	8.5	16.7

Table 5: Logistic regression results showing adjusted effects (odds ratio) of selected background characteristics on any risk behaviors of adolescents by age in two different models

Selected characteristics	Model-I Age 10-19 years Exp (B)	Model-II Age 20-24 years Exp (B)
Religion		
Hindu [R]	1.000	1.000
Muslim	1.271***	1.263***
Sikh	1.005	1.052
Christian	0.576***	0.900
Others	1.343***	1.241*
Caste		
Scheduled caste [R]	1.000	1.000
Scheduled tribe	1.962***	1.621***
Other backward class	0.799***	0.755***
Others	0.873***	0.866***
Standard of living		
Low [R]	1.000	1.000
Medium	0.923**	0.765***
High	0.474***	0.472***
Marital status		
Never married [R]	1.000	1.000
Ever married	1.595***	1.131***
Working status		
Not working [R]	1.000	1.000
Working	6.804***	5.560***
Education		
Illiterate [R]	1.000	1.000
Literate	1.015	1.072**
Place of residence		
Urban [R]	1.000	1.000
Rural	1.163***	1.161***
Living single		
No [R]	1.000	1.000
Yes	3.233***	2.332***
Relationship with head of household		
Related [R]	1.000	1.000
Adopted	1.821*	1.206
Not related	2.245***	2.003***
Sex of the head of household		
Male [R]	1.000	1.000
Female	1.055	0.890**
Constant	0.023	0.082
-2 Log likelihood	32736.708	33422.860
Nagelkerke R Square	0.163	0.184
Number of cases	104020	42308

Note: Dependent variable: 0=not indulge in risk-taking behaviour and 1=indulge in risk-taking behaviour
[R] Reference Category
Significance levels: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Table 6: Health status of adolescents according to selected risk behaviours by age

Adolescent Age-group	Risky behaviour	Selected morbidity conditions in per thousand		
		Asthma	Tuberculosis	Jaundice
	Tobacco chewing			
10-14	No	9	2	12
	Yes	12	3	19
15-19	No	8	2	14
	Yes	15	8	30
20-24	No	9	4	14
	Yes	14	6	32
	Smoking			
10-14	No	9	2	12
	Yes	14	0	29
15-19	No	8	3	15
	Yes	15	3	32
20-24	No	10	4	15
	Yes	14	5	30
	Drinking			
10-14	No	9	2	12
	Yes	4	0	39
15-19	No	8	3	15
	Yes	14	5	27
20-24	No	10	4	16
	Yes	19	6	31
	Any risky behavior			
10-14	No	9	2	12
	Yes	10	2	20
15-19	No	8	2	14
	Yes	15	6	31
20-24	No	9	4	14
	Yes	13	5	30