Factors Influencing Age at First Sexual Intercourse, Number of Partners and Condom Use among Male Slum Youth in Pune India

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ABSTRACT

In India, more than one third of the estimated two and a half million people infected with AIDS are in the 15 to 29-year old age group. However, limited information exists on the factors that influence sexual initiation and other related sexual behaviors among adolescents. Even less is known about the factors that influence sexual behaviors among young, unmarried males living in urban slums, a population characterized by high vulnerability to STI/HIV infections due to their engagement in sexual and other risk behaviors. To fill in these large gaps of knowledge, this study uses data collected from 900 unmarried male slum youth to examine the relationships between sexual initiation, number of sexual partners, and condom use at first intercourse and factors within the family/household social environment, peer environment, as well as individual-level factors. Regression analyses found factors such as religion/caste, parental and respondent education, parental supervision, experience of physical abuse and peer drinking to significantly impact the age of sexual initiation and the subsequent number of life time partners. Condom use at first intercourse appears to be significantly influenced among other factors by partner-type characteristics. These findings indicate that in low resource urban settings the influence of family and friends as role models can play an important role in determining the initiation of sexual behavior among male youth. Interventions such as strengthening parental care and supervision and and the use of peer mentors within the community are indicated as a means to guide young males in making behavior choices that result in favorable health outcomes.

INTRODUCTION

Urban slum settings in developing countries are emerging as a new frontier of public health challenges with their burgeoning populations of the poorest and most vulnerable groups in terms of exposure to health risks and unequal access to services (Dodoo et al. 2006; David et al. 2007). Rapid urbanization and employment opportunities attract migrant labor and new slums and informal settlements are arising continuously. A review of studies from Kenya indicates that, compared to living in impoverished rural

settings, adolescents who live in urban slum settings significantly increase their risk to adverse sexual outcomes (Dodoo et al. 2006). In such settings, young women are often coerced to use sex as a means for economic survival, while young men engage in risky sexual practices by having easy access to liquor and commercial sex workers (Dodoo et al. 2006; Sivaram et al. 2007). Studies conducted among male adolescents in urban slums of Brazil (Juarez and Le Grand 2005), Thailand (Somrongthong et al. 2003), and Zambia (Magnani et al., 2002) reaffirm this and find that sexual initiation and number of sexual partners among young males is often much higher than their rural counterparts.

In India, existing research on unmarried male youth sexual behavior and its risk of susceptibility to STI/HIV infections is sparse (Collumbien et al. 2007; Hausner 2002; Abraham 2002; Abraham and Kumar 1999; Verma et al. 2006). Traditionally, premarital sex for girls and boys has been limited in India due to a culture of patriarchy that places great value on the virginity of youth until their marriage and it is assumed that pre-marital sex is relatively rare (Sharma and Sharma 1997; Jejeebhoy 1998; Abraham 2002; Alexander et al. 2006). However, studies conducted in the past two decades show that sexual behavior among unmarried adolescents is quite prevalent, particularly among young males, with an estimated 20-30% of unmarried young males and 6% of unmarried young females having reported premarital sex (Jejeebhoy 1998; Hausner 2002). Negative outcomes of STIs/AIDS threaten the health of this segment of the population. Over one-third of the estimated 2.5 million HIV-infected cases in India emanate from the age group 15-29 years (NFHS 2005; National Aids Control Organization 2005), and half of all new HIV infections occur among men under 30 (Verma et al. 2006). Yet, the HIV/AIDS epidemic among youth remains largely invisible and little is known about young men's sexual behavior especially in urban areas where sexual activity and STI prevalence among young males is high (Abraham and Kumar 1999; Awasthi et al. 2000).

The few studies that have examined the sexual behavior of socio-economically disadvantaged urban youth indicate that 47% of unmarried male youth were sexually experienced in Mumbai (Abraham and Kumar 1999) and 19-28% of male youth reported pre-marital sex in a Delhi slum (Jaya and Hindin 2007). These studies portray a picture of considerable premarital sexual activity among male slum youth. The risk of STI/HIV

infections among young males is accentuated by unprotected sex, lack of knowledge and poor access to health facilities. To understand further about the sexual behavior among young males in urban slum communities, this study examines how the social context of the urban slum contributes to sexual behavior. Specifically, this study examines how factors from the family environment, the peer environment and characteristics of the young male living in an urban slum interact to sexual behaviors.

Guiding this study is the ecological perspective which posits that youth's behaviors and decision-making are influenced not only by individual characteristics, but also by the characteristics of family members, peers, and community members (Resnick 2007; Jessor et al 1992, 2003; Blum et al. 2003; Blum and Mmari 2004). Thus, the emphasis is on the context within which sexual behavior takes place instead of on an individual's knowledge, attitudes, and related risk behaviors – a framework that has so far predominated the study of adolescent sexual behavior. Understanding the context is particularly important for male adolescents living in Indian urban slums because of the close intertwining of family, peers and other community members in the typical slum milieu.

In the urban slums, young males typically live at home until marriage, and many continue to live at their parents' home even after marriage. Thus, family values and role models regarding the importance of religion and morality, marriage, sexuality, educational goals and socio-economic status during the formative years are important factors in determining adolescent sexual experience (Abraham and Kumar, 1999; Manlove et al., 2006). Research in other developing countries indicates that positive parenting (measured primarily in terms of parent support and parental monitoring) is a very strong protective factor for decreasing the likelihood that an adolescent will have had pre-marital sexual intercourse (Juarez and Le Grand 2005; Thurman et al. 2006; Magnani et al. 2002). In the Indian urban slum environment, parental supervision of adolescent sons and their companions is often low and young males are typically allowed to stay away from home for long hours, thus increasing their likelihood of engaging in the clandestine pursuit of premarital sexual and other risk activity (Sodhi et al. 2007).

In addition to parents, supportive and caring relationships with teachers and other non-parental adults in the community can also reduce the likelihood of a variety of adolescent risk behaviors (Blum et al. 2003; Awasthi et al. 2000; Juarez and Le Grand 2005). In contrast to these protective factors, the social domains of family and community have been found to increase the risk to negative health behaviors among adolescents. For example, negative childhood experiences of physical or sexual abuse have been found to increase subsequent risky sexual behavior among adolescents, such as sex with multiple sexual partners and unprotected intercourse (Johnson et al. 2006; Hillis et al. 2001; Ramakrishna et al. 2004).

Having access to films, videos, and televisions can also strongly influence the sexual behavior of male youth, in particular. For example, several studies have now demonstrated that males who have watched pornographic material are much more likely to have unprotected sex than males who have not seen such media (Abraham 2002; Sodhi et al. 2007; Resnick 2007). Friends and peers also play an important role in young people's forays into sex and related risk behaviors (Upadhyay and Hindin 2006; Collumbien et al 2007; Sodhi et al. 2007). Studies conducted in the US indicate that having friends as role models for conventional behavior make it easier for youth to obtain good grades in school and participate in positive extra-curricular activities such as membership of youth clubs (Engels and Bogt 2001; Bradley and Wildman 2002). On the other hand, the influence of friends who exhibit behavior such as rebelliousness, alcohol use, violence and casual sex can be predictive of early age at sexual intercourse and other sexual risk behaviors (ibid).

The school environment can also have a large impact on the sexual behaviors of adolescents, and this has been demonstrated among Indian adolescents as well. For example, urban male youth who have achieved a higher level of education are much less likely to have had unprotected sex as compared to lesser educated male youth from poor urban areas (Abraham and Kumar 1999; Potdar and Koenig 2005).

Further, the caste and religious affiliations of youth also affect the likelihood of premarital sexual experience, since typically, Indian male youth with low educational

levels and living in urban slums usually belong to the lower castes, are more likely to be non-Hindu and have relatively easy access to liquor and prostitutes within the slum milieu (Niranjan et al. 2005). Given this unique framework within which sexuality is situated, young, unmarried males living in urban slums are likely to have a high propensity to engage in early sexual and other risk behaviors (Sodhi et al. 2007; Abraham and Kumar 1999; Bankole et al. 2004)

STUDY RATIONALE

This study focuses on three sexual behavioral outcomes: age at first sex, number of sexual partners, and condom use at first sex. The first outcome, age at first sex, is an important outcome to study among adolescents for a variety of reasons. An earlier study with data from 14 countries shows that the context of early sexual experience for young men in developing regions is usually non-marital (Bearinger et al. 2007). Thus, the outcome of younger age at first sexual intercourse differs in important ways from sexual relations at later stages: the likelihood of engaging in risky sexual practices is enhanced by lack of knowledge about sexual risk taking, casual partners, lack of planning to take measures to avoid unsafe sex, and limited access to reproductive health services available and acceptable to youth (Juarez and LeGrand 2005). This is exacerbated in slum settings where low levels of education and poverty hinder access to services and safe sexual practices (Dodoo et al. 2006). Further, the early onset of sexual activity is a risk factor for acquiring STI/HIV since the potential period of exposure to multiple partners and infection is longer (Hallett et al. 2007).

Young people who have multiple sexual partners are at increased risk of contracting STIs including HIV (Bearinger et al. 2007). In countries where data are available, a substantially larger proportion of adolescent boys than girls have had two or more lifetime partners (Bearinger et al. 2007; Magnani et al 2002; Upadhyay and Hindin 2006). As compared to young women who are expected to show restraint, sexually active Indian young men in low resource settings tend to have multiple partners including girlfriends, sex workers, married women, work colleagues as well as other men (Collumbien et al. 2007; Sodhi et al. 2007; Verma et al. 2006; Hausner 2002; Abraham

and Kumar 1999), and their first sexual experience is likely to be with an acquaintance, rather than a romantic partner (Alexander 2006). Thus, even if young women abstain from premarital sex, their partners' sexual behavior may still put them at risk of contracting STIs.

Finally, condom use represents an important means of preventing negative reproductive health outcomes (Bearinger et al. 2007; Juarez and LeGrand 2005; Gage 1998). Although data from sub-Saharan Africa and Asia suggest that use of condoms is increasing worldwide (Bearinger et al. 2007), the proportion of sexually active young people who report condom use is still low. Condom use remains low particularly among youth younger than 16 and especially among those younger than 14 as indicated in separate studies among slum youth in Brazil (Juarez and LeGrand 2005) and Zambia (Magnani et al 2002). In India, condom use is not prominent among young males, except perhaps where the perceived risk is high, such as when having sex with sex workers (Hausner 2002; Verma et al., 2006). Use of protection at first sex is an important predictor of subsequent safe practices and it is important to note the context within which this behavior takes place, especially among Indian male youth in low resource, high risk settings.

METHODS

Study area and population

The city of Pune, located in the state of Maharashtra, India, is particularly suited to the study of factors associated with early sexual debut and other risk behavior among unmarried youth in low resource urban settings. Rapid industrialization and proximity to Mumbai has resulted in an influx of migrant workers and the proliferation of slums and slum-dwelling youth. Along with Mumbai, Pune is one of the major areas of HIV incidence and prevalence in India with a prevalence rate of around 1.2% (Godbole and Mehendale 2005; Pathfinders International 2006). Since most studies in India indicate

that the age of sexual initiation for males is usually around 17-18 years (Jejeebhoy 1998), the age group of the sample was restricted to 18-22 years.

Study Design

Data for this study came from a sample of unmarried male youth aged 18-22 years, living in two major slums of Pune and not attending college. Sample size calculations led to a target sample size of 600 male youth who were interviewed after obtaining informed consent[1]. Participants were assured that the interviews were completely anonymous and confidential. Participation was totally voluntary and no monetary or other reward was given to participate. No respondent refused to participate. Two interview modes - the Audio Computer Assisted Self Interview (ACASI) and the Face to Face Interview (FTFI) - were used to administer questions. One aim of this project was to research the comparative efficacy of the two interview methods in eliciting information on sensitive risk behaviors; these results have been published elsewhere (Potdar and Koenig 2005). Survey questions were worded exactly the same and introduced in the same order across interview modes. The questionnaires were available in the two principal languages of the area (Marathi and English), and respondents were allowed to choose the language they were most familiar with to complete the interview. In order to facilitate responses, all questions were in the form of either dichotomized or multiple-choice responses. The questionnaire consisted of two parts: the first part collected background information about the respondent, while the second part consisted of questions on respondent risk behaviors and other correlates of interest. There were no skip patterns in the questionnaire. The questionnaire was extensively pre-tested and revised prior to finalization.

The questionnaire used for this survey was adapted from a core questionnaire developed by the World Health Organization (Cleland et al. 2001) and was modified to incorporate factors affecting adolescent sexual activity and other risk behaviors gleaned from a review of literature on adolescent sexual behavior in India and other developing

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[1] The sample size was arrived at by using a significance criterion of 0.05, and power of the significance test of 0.80, and a minimum difference of 7 percent in the proportion reporting a specific risk behavior across interview modes

countries. The slum survey was carried out between July and November 2003, with a total of 25 youth clubs interviewed, ranging in size from 15 to 30 respondents interviewed from each club. The data were entered in SPSS and was subsequently converted into STATA SE 8 for analysis.

Description of variables and analysis

The study considered three outcomes: age at first sex, total number of lifetime partners and condom use at first sexual intercourse. Age at first sex was a categorical variable defined as sexual intercourse by age 17. The correlates of early age at first sex (defined as sexual intercourse before the age of 15 years) were also examined. The behavioral outcome of number of life time partners was studied for the entire sample as a continuous variable for no partners (not sexually active), one partner, two partners, three partners and four or more partners. Condom use at first sexual intercourse was considered only for those who reported being sexually active and was defined categorically as use or non-use of a condom at first heterosexual premarital intercourse.

The independent variables affecting the three outcomes of youth sexual behavior described above were chosen from a detailed review of the literature. Bivariate analysis examined the associations between the various independent variables and each of the outcomes. Significant bivariate associations ($p<.05$) with the outcomes and theoretical importance in terms of explaining the outcomes of interest directed the final set of variables to be included for the multivariate models. The study examines demographic and socio-economic variables as well as other determinants that capture aspects of the family and peer environment and interpersonal relations during the respondent's formative years, including the nature of the sexual relationship for the prediction of condom use at first sex. An attempt was made to include exogenous variables in the models so that a low possibility exists of reverse causation. For example, the educational attainment variable used in the regressions was limited to having passed beyond the first four grades of school since progress in school at higher levels and sexual behavior may be jointly determined. The reference category for each variable was hypothesized to be least likely to contribute to a positive outcome for the first two outcomes of age at first

sex and the number of life time partners and most likely to contribute to a positive outcome for condom use at first intercourse.

Background characteristics: The level of education of the respondent was included in this group and is coded as 0-4 years of completed schooling or greater than 4 years of schooling with more than 4 years of schooling as the reference category. The religion and caste of the respondent constitute another variable in respondent characteristics, with the three main categories of being Hindu and of a non-backward caste as the reference category, and the other two categories including respondents that were Hindu and belonged to a backward caste or were non-Hindu (Muslim/Buddhist/Christian). Religion and caste were combined into the above categories since these are the predominant caste/religious groups in the slums. Identification with academic goals was captured by a variable characterizing level of academic performance during the childhood and teenage years as reported by the respondent with outstanding academic performance as the reference category. The age of the respondent at the time of the survey was used as a control for the two outcomes of age at first sex and the number of life time partners while age of the respondent at first sex was used as a control for the third outcome of condom use at first sex. The method of interview, whether face to face interview (FTFI) or via Audio Computer Assisted Interview (ACASI) was another control variable.

Family and home environment: Parental characteristics were measured by a proxy variable, the respondent's mother's level of education. It was categorized as 0-4 years of completed schooling and 4 or more years of schooling with the latter as the reference category. Family structure was examined by the following categories: living with two parents (as the reference category), one parent, or no parents during most of the formative years. A second family-level variable examined the role of parental supervision through the respondent's reported degree of freedom, and access to and from the home during the childhood and teenage years. The variable has three categories according to the relative freedom of access with no freedom of access as the reference category. The final variable studied within the family-level environment was the experience of violence or physical abuse as a child or teenager. The variable has three categories signifying different

frequencies of abuse with never having experienced physical abuse as the reference category.

Peer influence: This included a variable on peer drinking during the childhood and teenage years, with peers' never drinking alcohol as the reference category.

Partner characteristics: This variable captures the type of partner type at first sex with the three categories of a) friend/girlfriend as the reference category and b) acquaintance/neighbor and c) prostitute as the other two categories.

Logistic regressions were used to examine the odds of the two binary outcomes of having sex on or before the age of 17 years and the use of a condom at first sexual intercourse. Predicted probabilities were also calculated against each of the explanatory variables of the respondent having first sexual intercourse on or before the age of 15 years. OLS regression was used for calculating the coefficients for the third continuous outcome of number of life time partners.

RESULTS
Characteristics of Respondents

TABLE 1 ABOUT HERE

Table 1 presents the frequencies of the variables used in the multivariate analysis. The majority of the population (N=600) were between the ages of 18 and 20, with 47% 18 years of age. Of those surveyed the largest proportion were non-Hindu (38%), with Hindus belonging to a backward caste the second largest proportion (35%). The majority of respondents had attended some school with only 9% of the study population reporting no schooling. Respondents with mothers who had attended school for fewer than 4 years constituted 45% of the population and 72% had lived in a family with both parents present during their childhood and teenage years. Notably, nearly half (49%) reported experiencing physical abuse or violence as a child frequently or every day. Moreover, more than a third of the respondents (35%) reported having no freedom of mobility to

and from home during their childhood years, while a similar percentage of respondents (36%) reported some degree of freedom of movement, and the remaining third (29%) reported that they were given the freedom to move to and from their home the majority of their time. Less than 20% of the respondents reported that they had friends who drank frequently or everyday. Instead, the majority (55%) reported that their friends never drank. Most respondents reported being either outstanding or good students during their formative years. Only 13% reported being below average or poor. More than half of the respondents (53%) had not been sexually active up to the time of the interview and of the 202 youth who reported being sexually active, 33% had their first sexual experience by 17 years of age. Among the sexually active, the likelihood of their having sexual intercourse increased monotonically with age. The majority of sexually active respondents had only one sexual partner, although 12% reported having had four or more partners. Condom use at first intercourse was reported by 65% of the respondents. The most frequently reported partner at first sex was an acquaintance or neighbor (51%).

Early Sexual Activity

TABLE 2 ABOUT HERE

Table 2 shows the unadjusted and adjusted odds ratios for the reporting of sexual intercourse by age 17 for the selected explanatory variables. Belonging to a Hindu scheduled caste or scheduled tribe increased the adjusted odds of having sex by age 17 by 1.77 as compared to being a Hindu of the upper castes, an effect which was significant for both the unadjusted and adjusted models at the $p<0.05$ level. Low levels of respondent schooling also increased the odds of being sexually active by age 17 significantly by 2.63 ($p<0.01$) for the unadjusted model, but this significance disappears in the adjusted model. Little or no education of the respondent's mother significantly increased the odds of the respondent having sex by age 17 (adjusted OR = 1.97, $p<0.01$). Type of family while growing up was not significantly related to the onset of early sexual debut. Freedom of access to and from the home while growing up increased the odds significantly of becoming sexually active, as indicated in the unadjusted model (OR = 1.69, $p<0.05$). The experience of violence at home during childhood was positively associated with earlier

sexual initiation, with frequent experience of physical abuse resulting in significantly higher odds of first sex by age 17 (OR = 1.89, p<0.05) in the adjusted model. Similarly, alcohol drinking by peers during the respondent's influential years increased the odds significantly of experiencing sexual intercourse by age 17 (OR = 1.98, p<0.01) in the adjusted model. The self reported type of student has a non-significant impact on the age at first sexual intercourse.

The last column of the table shows the predicted probability of having first sexual intercourse before age 15 for boys of different characteristics after controlling for the effects of all other variables, based on the model's coefficients. Relative risks can be estimated for each variable by calculating the ratio of two predicted probabilities in the table. Interestingly, none of the factors used in the model appear to have a significant impact on the probability of having sex before age 15.

Lifetime Sexual Partners

TABLE 3 ABOUT HERE

Table 3 shows OLS regression results of the number of lifetime sexual partners regressed on the various independent variables. The first column in Table 3 indicates coefficients for reported lifetime sexual partners regressed on each of the independent variables. The second column in Table 3 indicates regression coefficients that have been adjusted for all other independent as well as control variables. Older respondents (aged 21-22 years) reported on average, 0.48 more sexual partners than respondents less than 18 years old. This positive influence is statistically significant in both the adjusted and unadjusted models. Other age categories do not have a statistically significant association with the number of lifetime sexual partners, though the coefficients are positive for all age groups.

Religion and caste are not statistically related with the number of lifetime sexual partners in either the unadjusted or adjusted models. This relative relationship holds in both the unadjusted and adjusted models. As compared to those with some schooling,

respondents with limited schooling report on average 0.61(p<0.01) more sexual partners in the adjusted model, and 0.96 (p<0.001) more lifetime sexual partners in the unadjusted model. Mother's education appears to have a significant positive influence on the number of reported lifetime sexual partners in the unadjusted model, but the coefficient does not retain significance in the adjusted model.

Having freedom of access to and from the home increases the average number of lifetime partners. As compared to those who never or rarely were able to leave the home, those with the most freedom of movement reported 0.38 more lifetime partners (p<0.01) in the unadjusted model; however, the significance is lost in the adjusted model. Experiencing frequent violence in the home increases the average number of lifetime partners by 0.32 (p<0.05) in the adjusted model; however, rarely experiencing violence does not appear to significantly increase the number of lifetime sexual partners relative to the "never" incidence category. Exposure to any level of drinking among peers increases the number of lifetime sexual partners in both the adjusted and unadjusted models. Respondents whose peers drank rarely reported 0.42 (p<0.001) more sexual partners and those whose peers drank frequently reported approximately the same increase (0.47, p<0.01).

The "type of student" variable had a non-significant influence on the number of lifetime sexual partners. Respondents who received the ACASI interview method reported fewer lifetime sexual partners, though these results were not statistically significant.

TABLE 4 ABOUT HERE

Table 4 indicates unadjusted and adjusted odds ratios for the reported use of condoms during first heterosexual sex against selected variables. Delaying first sex until after age 15 significantly increases the odds of using a condom at first sex in the unadjusted model, and this relationship is strengthened after adjustment for other effects. As compared to those who were less than 15 years at first sex, those who were between 16 and 17 years at first sex were 4.97 times more likely (p<0.001) to use a condom at first

sex. Being 18 or older at first sex increased the adjusted odds to 9.56 (p<0.01). As compared to those whose first sexual encounter was with a friend or girlfriend, those whose first sexual encounter was with an acquaintance or neighbor were less likely to use a condom (adjusted OR=0.42, p<0.01). However, respondents were more likely to use a condom with a prostitute than with a friend or girlfriend (adjusted OR=5.58, p<0.05).

Experience of violence during childhood decreases the likelihood of using a condom at first sex with the "rarely experienced violence at home" category having a significant OR of 0.20 (p<0.05) in the adjusted model. Peers' drinking of alcohol during the respondent's formative years decreases the odds of condom use at first sex in both models. This decrease is significant for those with peers who drank frequently both in the unadjusted model (OR =0.39, p<0.05) and in the adjusted model (OR =0.34, p<0.05).

The impact of other independent variables such as religion and caste, schooling, freedom of access and interview method is not significant. Results for the effect of mother's educational level, family type and type of student on the respondent's condom use are mixed and also non-significant.

DISCUSSION AND CONCLUSION

An important limitation of this study concerns the representativeness of our slum study population and comparability to previous studies of young unmarried men. In part, this stems from the fact that our sample of slum youth was based upon convenience—specifically, the availability of slum youth to interview in the selected slum areas. We view any bias resulting from this approach as unlikely to be serious: however, caution should still be exercised in generalizing our results to other male slum populations. Another important limitation is that individuals' reports of their sexual behavior are susceptible to social desirability bias. In the survey we took steps to ensure the reduction of this bias by the use of ACASI, an interview method generally associated with higher frequency in the reporting of less socially desirable outcomes (Potdar and Koenig 2005) However, it was unclear as to how effective this approach was among the largely non-

computer literate slum population giving us some doubts as to the accuracy of the self-reports of sexual behavior.

Despite these limitations, the study findings indicate that slum youth's sexual practices and the risk of acquiring sexually transmitted diseases including HIV appear to be strongly influenced by individual and environmental factors that precede the onset of sexual activity. This study uses data collected from young unmarried males aged 18-22 years living in two slums in Pune to analyze the correlates that predate young men's age at first sex, the number of life time partners and the use of condoms at first sex. The onset of sexual activity is relatively late in this group with less than half of the respondents aged 22 reporting sexual activity as compared to youth in other developing countries where the median age at sexual initiation is between 14 and 15 years (Juarez and LeGrand 2005; Magnani et al 2002; Bearinger et al. 2007). However, higher age at sexual initiation of 18 years was also found in another study conducted among male youth in India (Collumbien et al. 2007). The use of condoms at first sex is relatively high at 66% as compared to < 30% in Brazil and Zambia. The higher use of condoms at first sex could be due to later age at sexual initiation (Juarez and LeGrand 2005). For example, Hallett et al (2007) report that male youth in rural Zimbabwe initiate sex at a relatively late age of 19 years as compared to other estimates for African countries but with more consistent condom use.

In our study, half of the sexually experienced youth had their first sexual encounter with an acquaintance or neighbor, and 65% had used a condom during this first encounter. About 44% of the sexually active youth had only one partner while the remaining 56% reported two or more partners. This coincides with findings from research in India (Sodhi et al. 2007; Collumbien et al. 2007) and other countries where the number of life time partners is negatively associated with later age of sexual debut (Hallett et al. 2007; Magnani et al 2002)

The study findings indicate that while sexual activity begins late and its incidence is low among unmarried youth living in these particular slums, young men possessing certain characteristics are more likely to have experienced pre-marital sex. Membership

in a minority tribe or caste and low literacy levels significantly increase the odds of having an early onset of sexual activity. Youth belonging to scheduled castes and tribes usually identified with poverty and low education are more likely to engage in sexual activity by age 17 and even before the age of 15. Similar attributes can be seen in youth reporting higher number of life time partners.

The results of the regressions for age at sexual initiation and the number of life time partners indicate the importance of parental involvement and peer influence in children's upbringing, with stricter parental supervision, an abuse free home and non-drinking peers contributing significantly to postponing first sexual intercourse and fewer overall number of sexual partners. Of particular interest is the high percentage of youth (49%) reporting having experienced some form of violence, (physical and/or sexual abuse), while growing up: a finding supported by recent research in India in this area (Kacker et al. 2007). In this nationally representative study, an overwhelming majority (69.0%) of the 12,447 child respondents reported physical abuse and 53% reported sexual abuse in one or more situations, with the main perpetrators being close family relatives or persons known to the respondent in positions of trust and responsibility. Research conducted in the US (Johnson et al. 2006; Hillis et al. 2001) indicates that participants who reported a history of physical and sexual abuse had engaged in higher sex-risk behaviors than those who reported having never been abused. In our study, the significant impact of experiencing violence during the formative years on the early onset of premarital sexual activity and the number of life time partners appears to be consistent with the above findings.

Further, the results of the regressions for condom use at first sex point to the significant negative influence of alcohol drinking by peers on the respondent's use of condoms as well as the significant positive influence of the type of partner (with prostitutes) warranting the most frequent use of condoms. This is consistent with other research in urban India indicating that condom use was lower among males who reported they drank to feel disinhibited, and higher among those who reported that their most recent partner was a sex worker and (Sivaram et al. 2007).

Reproductive health programs and Information and Education Communication (IEC) interventions should encourage parents to remain heavily involved in their children's lives and supervise the kind of friends their children develop. A 10-year project in India found that one of the most effective ways to improve adolescents' health is to involve parents, in-laws and the communities where adolescents live (Pande et al. 2007). This could be difficult in a slum environment where most parents work long hours, and though there are few broken families, fathers are often given to drink and violence and mothers are left to bear the responsibility of rearing children. The high frequency of violence reported by study respondents and the significant relationship between experience of violence during the formative years and subsequent sexual risk behavior study underscores the role of parents and caregivers as primarily responsible for instilling protective health behaviors in children under their care. Abused children often engage in sexual risk behavior as adolescents in the hope of achieving intimacy (Hillis et al. 2001). Having grown up in families unable to provide needed protection, such individuals maybe unaware about how to protect themselves and may underestimate the risks they take in their attempts to achieve intimacy– this can pose a serious public health challenge. Therefore, there is a need to enhance parenting skills, their knowledge of the subject and sensitivity, which will enable them to better handle situations of child abuse (Kacker et al. 2007). Positive parental supervision is crucial in protecting adolescents against the new health and social threats of concentrated poverty in urban areas, crowding, and increased exposure to disease and addiction in many developing countries (Dodoo et al. 2006; Resnick 2007). Again, the significant impact of peer intake of alcohol on the respondents' sexual risk behavior further emphasizes the need for parental monitoring of their children's friends. Moreover, youth should be given opportunities to interact with positive adult and peer role models who can support them with advice, awareness and accessibility to safe sexual practices (Kacker et al. 2007; Johnson et al. 2006; Hillis et al. 2001).

However, the use of condoms by the majority of the sexually active respondents at first sex, the significant impact of partner type on use of condoms at first sex and the positive impact of later age at sexual initiation on condom use point to the greater awareness of the protective nature of condoms and their easy availability in the slum

environment. Programs on HIV/AIDS prevention have had a strong impact on slum populations where high HIV prevalence has prompted several government and nongovernmental (NGO) agencies to work on improving knowledge, availability and use of condoms (Pathfinder International 2006). A study in South Africa indicates that social acceptance of condom use can be improved among young people in areas with high HIV prevalence (Maharaj and Cleland 2006). Again, the tendency to use condoms among those who began sex late is consistent with the finding that initiating sex at later ages ensures less risky behavior based on better knowledge and the desire for positive health outcomes (Juarez and LeGrand 2005; Hallett et al. 2007)

The findings of this study provide important insights into some of the individual and environmental determinants of sexual behavior among male urban slum youth in India from the point of view of establishing a causal relationship between the existence of these factors before the onset of sex and subsequent sexual practices. Further research is necessary to investigate the impact of these factors during the early years on gender differences in virginity, sexual experiences and behaviors in low resource urban youth populations.

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Table 1. Respondent characteristics: Percentage distribution of youth slum population surveyed, by selected characteristics, Pune, India, 2003 (N=600)

Characteristic	Percent	(N)
Full Sample (N = 600)		
Age		
18 years	47.2	283
19 years	17.0	102
20 years	13.0	78
21-22 years	22.8	137
Religion/Caste		
Hindu non SC/ST[2]	26.7	160
Hindu SC/ST	35.2	211
Non Hindu	38.2	229
Respondent Education		
> 4 years	91.0	546
0-4 years	9.0	54
Mother's Education		
> 4 years	55.2	331
0-4 years	44.8	269
Type of Family during Childhood		
Both parents	72.2	433
Mother only/father only	8.3	50
Others, parents not present	19.5	117
Freedom of Movement from Parents During Childhood		
Never	35.8	215
Rarely/sometimes	35.0	210
Mostly	29.2	175
Experienced Violence		
Never	21.8	131
Rarely	29.0	174
Frequently/every day	49.2	295
Peers Drinking of alcohol		
Never	55.3	332
Rarely	26.2	157
Frequently/every day	18.5	111

Type of Student during Childhood		
Outstanding	16.8	101
Above average	36.8	221
Average	33.5	201
Below average/poor	12.8	77
Survey Method		
Face-to-Face	50.0	300
ACASI	50.0	300
Number of Lifetime Partners		
Not sexually active	52.3	314
One partner	21.2	127
Two partners	8.7	52
Three partners	6.2	37
Four or more partners	11.7	70
Sexually Active Sample only (N=202)		
Age at First Sex Among Sexually Active		
<15 years	22.1	48
16-17 years	33.2	72
18 years and above	37.8	82
Condom Use at First Heterosexual Sex		
Used condom	65.4	132
Did not use condom	34.6	70
Type of Partner		
Friend/girlfriend	39.3	79
Acquaintance/neighbor	50.7	102
Prostitute	10.0	20

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[1] Scheduled castes and scheduled tribes (SC/ST) constitute members of the Hindu population who receive special concessions within India in education, employment, etc. due to their socio-economically backward status

Table 2. Unadjusted and adjusted odds ratios for reporting of sex during or before age 17 among slum youth: Pune, India 2003 (N=600)

Variables	Unadjusted OR	Adjusted OR †	Predicted probability of having sex before 15
Religion/caste of respondent			
Hindu non sc/st (RC)	1.00	1.00	0.07
Hindu sc/st	1.69*	1.77*	0.11
Non Hindu	1.19	1.39	0.05
Respondent education			
> 4 years (RC)	1.00	1.00	0.07
0-4 years	2.63**	1.38	0.17
Mother's education			
> 4 years (RC)	1.00	1.00	0.05
0-4 years	2.44***	1.97**	0.12
Family type			
Both parents(RC)	1.00	1.00	0.06
Mother alone /Father alone	1.35	1.24	0.14
Others: parents not present	1.30	1.28	0.11
Freedom to come and go from home			
Never (RC)	1.00	1.00	0.10
Sometimes	1.09	0.87	0.06
Mostly	1.69*	1.37	0.07
Experienced violence at home during childhood			
Never (RC)	1.00	1.00	0.06
Rarely	1.54	1.58	0.06
Frequently/everyday	2.51**	1.89*	0.09
Peer drinking during childhood			
Never (RC)	1.00	1.00	0.06
Rarely	1.77*	1.67*	0.09
Frequently/everyday	2.46***	1.98**	0.12
Type of student/worker during childhood			
Outstanding (RC)	1.00	1.00	0.05
Above average	1.17	1.02	0.08
Average	1.26	0.95	0.09
Below average/poor	1.34	0.99	0.08
Interview method			
Face to face (RC)	1.00	1.00	0.08
Audio-CASI	0.76	0.82	0.07

† Adjusted for the effects of respondent caste, religion, education, mother's education, interview method
 *p<.05 **p<.01 ***p<.001

Table 3. Regression coefficients for reported number of lifetime sexual partners among slum youth: Pune, India 2003 (N=600)

Variable	Unadjusted coeffs	Adjusted coeffs†
Current age (yrs)		
18 (rc)		
19	0.10	0.10
20	0.33	0.27
21+	0.56***	0.48**
Religion/caste		
Hindu non sc/st (rc)		
Hindu sc/st	0.15	0.17
Non Hindu	-0.06	0.04
Respondent education		
> 4 years (rc)		
0-4 years	0.96***	0.61**
Mother's education		
> 4 years (rc)		
0-4 years	0.46***	0.21
Family type		
Both parents(rc)		
Mother alone /Father alone	0.14	-0.11
Others: parents not present	0.25	0.19
Freedom to come and go from home		
Never(rc)		
Sometimes	0.24	0.14
Mostly	0.38**	0.13
Experienced violence at home during childhood		
Never(rc)		
Rarely	0.11	0.00
Frequently/everyday	0.60***	0.32*
Peer drinking during childhood		
Never(rc)		
Rarely	0.51***	0.42***
Frequently/everyday	0.72***	0.47**
Type of student/worker during childhood		
Outstanding(rc)		
Above average	0.23	0.09
Average	0.16	-0.01
Below average/poor	0.21	-0.09

Interview Method

Face to Face		
ACASI	-0.19	-0.11

†Adjusted for the effects of respondent caste, religion, education, mother's education, interview method

*p<.05 **p<.01 ***p<.001

Table 4. Unadjusted and adjusted odds ratios for reporting condom use at first heterosexual intercourse among sexually active slum youth: Pune, India 2003 (N=202)

Variables	Unadjusted OR	Adjusted OR †
Age at first sex(yrs)		
<15 (rc)	1.00	1.00
16-17	2.68*	4.97**
18+	4.89**	9.56***
Partner Type		
Friend/girlfriend (rc)	1.00	1.00
Acquaintance/neighbor	0.45*	0.42*
Prostitute	4.26*	5.58*
Religion/caste		
Hindu non sc/st (rc)	1.00	1.00
Hindu sc/st	0.95	0.72
Non Hindu	0.83	0.60
Respondent education		
> 4 years (rc)	1.00	1.00
0-4 years	0.78	0.70
Mother's education		
> 4 years (rc)	1.00	1.00
0-4 years	0.90	1.27
Family type		
Both parents(rc)	1.00	1.00
Mother alone /Father alone	1.78	3.46
Others: parents not present	0.61	0.47
Freedom to come and go from home		
Never(rc)	1.00	1.00
Sometimes	0.88	1.14
Mostly	0.66	0.73
Experienced violence at home during childhood		
Never(rc)	1.00	1.00
Rarely	0.41	0.20*
Frequently/everyday	0.57	0.37
Peer drinking during childhood		
Never(rc)	1.00	1.00
Rarely	0.82	0.70
Frequently/everyday	0.39*	0.34*
Type of student/worker during childhood		
Outstanding(rc)	1.00	1.00
Above average	2.04	3.15

Average	1.34	2.58
Below average/poor	0.96	2.66
Interview Method		
Face to Face	1.00	1.00
ACASI	1.01	0.58

† Adjusted for the effects of respondent caste, religion, education, mother's education and interview method

*p<.05 **p<.01 ***p<.001