

## **The Effect of Childhood Maltreatment on HIV- risk-related Sexual Behavior among Sexually Active Young Adults in the USA**

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### **INTRODUCTION**

HIV/AIDS is one of the major public health concerns all over the world. According to UNAIDS (2010), even though much progress has been made in halting the spread of HIV, much concerted efforts are still necessary in achieving UNAIDS's vision -zero new HIV infection, zero discrimination and zero AIDS related deaths. Achieving this is a tremendous challenge in the days to come (UNAIDS, 2010).

According to the latest estimates, 33 million people were living with HIV/AIDS in 2009. Of these, more than 30 million adults and 2.5 million children were living with HIV/AIDS in the same year. More than 2 million people were newly infected from HIV in 2009. Total number of deaths from AIDS- related deaths were about 2 million in 2010 (UNAIDS, 2010).

HIV/AIDS has affected many countries; the USA is also not free from it. According to CDC (2012), about 1.2 million people were living with HIV/AIDS in 2008. Estimates from CDC from 2007-2010 show that about 48000 were newly infected with HIV in 2010. The mode of transmission of HIV was mainly due to men having sex with men (MSM). About 61 percent of transmission has been identified through MSM whereas about 27 percent of total transmission have been through heterosexual activities (

<http://www.cdc.gov/hiv/topics/surveillance/basic.htm#hivest>).

Young people have been considered as one of the high risk groups because of their behavioral risk factors such as alcohol use, drug use, multiple sexual partner etc .The overall

prevalence rate of young people of men and women were 0.3 and 0.6 respectively in the world. The overall prevalence has been decreasing among young people because of safer sexual practices. The knowledge of HIV/AIDS among young people have been increasing, but it needs to grow further (UNAIDS, 2010).

As the young people especially adolescents and young adults are concerned, they are still in high risk. According to CDC, among US high school students in 2009, 46 percent had sexual relationship and 39 percent did not used condom at last sex. According to CDC, more than 8000 young people of age 13 to 24 years of age in 40 states reported that they were infected with HIV in 2009 (<http://www.cdc.gov/healthyyouth/sexualbehaviors/data.htm>).

There are many determinants of HIV risky behaviors among young people; child maltreatment is also considered one of them .Child maltreatment has been considered as major public health concern because of its deleterious effect on the overall development of individual's physical, cognitive, psychological, and behavioral development. According to Department of Health and Human Services (2009), it was estimated that 763,000 children were maltreated in 2009-almost 4 in 5 children were maltreated because of neglect; almost 1 in 5 suffered from physical abuse and 1 in 10 suffered from sexual abuse.

Delinquency is another major concern in USA. The latest estimate revealed that there were about 2.1 million arrests of persons younger than 18 years in USA in 2008. Juvenile were involved in one in six all violent crimes and more than one in four property crime arrests. (Puzzanchera, 2009).

Several studies have also documented that childhood maltreatment is associated with delinquency and HIV-risk-related sexual behaviors among adolescents and young adults (Brown, et al. 2000; Senn, et al. 2000; Mass & Sousa 2008; Yun, et al. 2010, Hussy, et al 2006).

However, substantial studies to examine the effect of childhood maltreatment on HIV-risk related sexual behavior adjusting for delinquency, measured through the life course perspective, are limited.

The purpose of this study is to examine the effect of childhood maltreatments- young adults who had a history of parental or caregiver neglect, physical, and sexual abuse by parents or caregivers on their childhood- on HIV risk related sexual behavior among sexually active young adults after adjusting for consistent delinquency, age, sex, and race/ethnicity.

## **LITERATURE REVIEW**

### **Individual Health Behavior Model**

Individual Health Behavior Models are mostly used to explain the individual health outcomes and the underlying mechanism associated with them. Health outcomes of individuals are affected if they do not engage in health promoting and preventive activities such as physical work out, healthy eating etc and engage in health risk behaviors instead: smoking, alcohol, drug abuse, delinquency, etc (Shi and Stevens 2010). There are various models under Individual Health Behavior Models. Of these, four models are commonly used in health research: Health Belief model, Theory of reasoned Action/Planned Behavior, Social Cognitive Theory, and Trastheoretical Model. (Redding, et al. 2000).Of these models, HBM and Social Cognitive Theory are particularly important in explaining HIV-risk-related sexual behavior.

Health Behavior model could be used to explain the health risk behavior of individuals. According to HBM, “individuals’ action to prevent from illness depends on their perception on their vulnerability to illness, aftermath of the condition, precautionary action prevents the condition, and the benefits of reducing threat of the condition exceed the cost of taking action.” (Redding, et al. 2000)

Social Cognitive Theory includes environmental and social factors along with individual factors. According to Social Cognitive Theory, individual behavior is a function of dynamic, continuous interaction between the individual, the environment, and behavior. Personal individual factors are enlisted as follows: a) personal characteristics such as demographic factors, personality and cognitive factors ; b) emotional/arousal coping factors which includes various techniques, strategies, and activities to deal with the situation stem from emotional/arousal situations; c) behavioral capacity which refers to individuals' capacity to deal with the situation based on their knowledge and skills; d) self-efficacy which refers to individuals' self- confidence on health outcomes based on their behaviors or confidence in handling the behaviors; e) expectation which refers to the individual's expectation of value of their behavior in respect to health outcomes; f) self-regulation which refers to individual's control over his/her behavior ; g) Observational/Experiential learning which refers to adapt certain behavior through observation and experience, and h) finally reinforcement which refers to continue or discontinue of behavior after the consequences of behaviors- For instance, reward and punishments.

The environmental factors are in the form of physical, social, cultural, economical and political These factors also interact with individual factors to influence individual behaviors. Likewise, past behaviors also influence individual as well as environment (Redding, et al. 2000).

The main thrust of these theory/models when utilizing in young population is that young people are vulnerable because of their risk taking behaviors and they are also less likely to engage in health promoting activities. Therefore, they are more prone to HIV infection than any other group. The activities of young people are influenced by social and environmental factors around them too.

### **The Life Course Perspective on Delinquency**

The main thrust of the life course perspective is that many behaviors of individual change over time. For instance, examining delinquent behavior from only one point of time might not be sufficient to disentangle its complexity. A person who was delinquent at some point of time might relinquish his activities and start his life as non -delinquent person; whereas other person who was non- delinquent in some point of time would turn into a delinquent person in later point of time. Researchers also have documented that delinquency starts usually in early adolescent stage (10-14 years), peaks in middle adolescence and then drops significantly in the adulthood (Agnew, 2003; Smith et al., 2000). So in this regard, it is always important to explore the individual, household and family, peers and contextual factors behind the increased delinquency in adolescence and declining delinquency in the adulthood.

### **Childhood maltreatment, delinquency, and HIV- risk- related sexual behavior**

Childhood maltreatment can be one of the important predictors of HIV –risk related sexual behaviors as well as delinquency. Various previous studies have documented well that those who had a history of childhood maltreatment are more likely to engage in HIV-risk related sexual behaviors ( Brown, et al, 2000; Senn, et al. 2000). For example, Brown, et al (2000) found that those adolescents who had a history of sexual abuse had less condom self-efficacy and low level of knowledge of HIV/AIDS. Likewise, Senn, et al. (2000) also found that those who had a history of child maltreatment especially sexual abuse were more likely to engage in high risk sexual behaviors.

In a recent study by Wilson and Widow (2011), found that childhood abuse and neglect were significantly related. They found that those who had a history of childhood abuse and neglect were two times higher risk of involving in HIV –risk sexual behavior in the middle adulthood. They also found that childhood maltreatment and delinquent activities were related,

but delinquent activities and HIV- sexual behavior were not related. In one of the studies done by Elze, et al. (2001), it was also found that sexual abuse and youth's recent HIV risk behaviors were positively and significantly associated, however other forms of childhood maltreatments were not found associated with it. They found that especially penetrative sex was consistently associated with risky behaviors.

Moreover, Cunningham, et al. (1994) also found that physical abuse and sexual abuse or rape were related to higher chances of engaging in various HIV risk behaviors : not only sexual behaviors but other risk behaviors too. However, Luster and Stevans (2000) in their study did not find any significance of physical and sexual abuse with the high-risk sexual behavior among males and females.

Various studies have documented that there is a strong association between child maltreatment and delinquency in later years (Mass, et al. 2008; Yun, et al. 2010; Hussy, et al. 2006). However, the relationship is not consistent with the type of maltreatment in other studies. Mass, et al. (2008) found Physical abuse as one of the consistent type of abuses predicting violent delinquency. In contrast, Yun, et al. (2011) found physical abuse was not associated with future violent delinquency. However, they found sexual abuse and neglect predicts violent delinquency efficiently.

One of the study found that life-course persistent delinquency was positively associated with risk taking behavior except for condom use; however, they did not find the same association between delinquency and STI (Aalsma, et al. 2010). Moreover, delinquency was also found associated with sexual transmission risk behaviors in a structural equation modeling (Stein, et al. 2010).

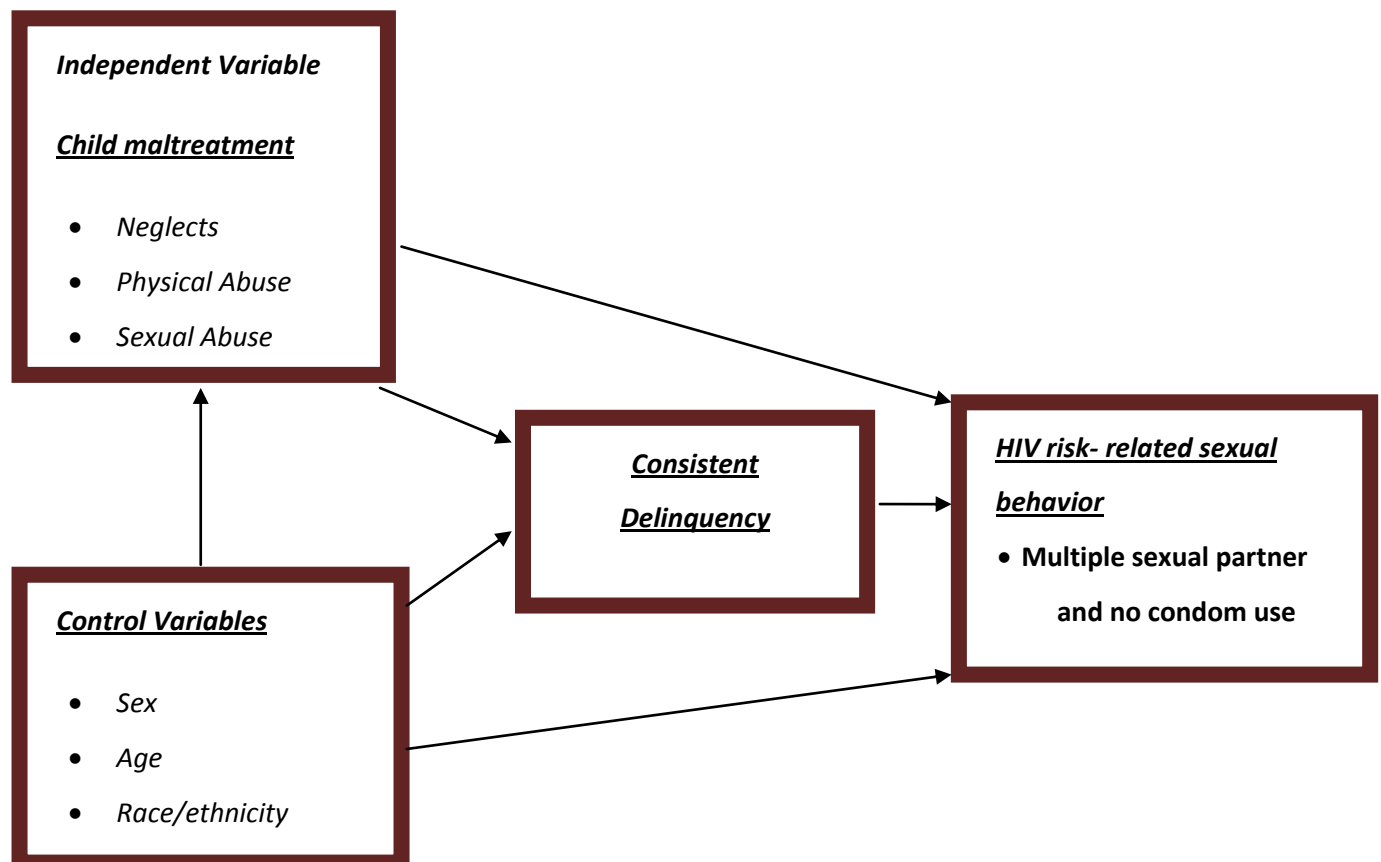
### **Other Demographic Variables and HIV risk- related sexual behavior**

Some of the demographic variables were also found having an association with HIV- risk related sexual behavior. Men are more likely to engage in HIV-risk related sexual behavior than women. Bensley, et al. (2000) found in their study that history of childhood chronic sexual abuse had 7-fold higher chance of involving in HIV risk related sexual behaviors among women and any sexual abuse combined with physical abuse had 5- fold chances in HIV risk related sexual behaviors . However, for women physical abuse was not found to have any association with HIV-risk-related sexual behaviors. Sexual abuse had 8- fold likelihood of engaging in HIV risk sexual behaviors among men (Bensley et al. 2000).

### Conceptual Framework

Following is the conceptual framework used to study the effect of childhood maltreatment on HIV-risk related sexual behaviors.

**Fig. 1 Conceptual Framework of Impact of Childhood Maltreatment on HIV-risk-related sexual behavior among sexually active young adults.**



## **Objective of the Study**

The major objective of this study is to find the effect of child maltreatment on the HIV- risk –related sexual behaviors with or without adjusting for consistent delinquency, age, sex, and race/ethnicity.

## **Specific Research Questions**

**The specific research questions of this study are:**

1. What is the effect of childhood maltreatment on HIV- risk- related sexual Behavior among sexually active young adults?
2. Do these effects of maltreatments hold after adjusting for delinquency?
3. What would be the effects of maltreatments even after controlling for other demographic variables of young adults?

## **Hypotheses**

- 1) Those sexually active young adults with a history of maltreatments in the childhood are likely to engage in HIV-risk related sexual behavior.
- 2) Consistent Delinquent young adults are more likely to engage in HIV-risk related sexual behaviors.
- 3) Males are more likely to engage in HIV-risk-related sexual behavior than females.

## **METHODOLOGY**

### **Data**

This study used the public use data from the first, second and third waves of the National Longitudinal Study of Adolescent Health (Add Health). Add health is a nationally represented most comprehensive study of adolescents. The data for the first wave of this survey was collected in 1994-1995 from adolescents in 7 to 12 grades. The third wave data was collected in 2001-2002.

### **Sample Design and Sample size**

The sampling design of the survey was a stratified two stage stratified sampling design. In the first stage, 80 high schools were selected from the sampling frame of 26,666 high schools. Each selected high schools were asked to provide the names of feeder school of middle and junior high school and for each high school, each feeder school was selected. The feeder school was selected based on proportional to the percentage of the high schools entering class coming from that feeder. In total 144, middle, junior high, and high school participated in the school based survey and 90,118 students took part in the survey. For the in-home component of the survey, 20, 745 adolescents were selected based on the school's roster of enrollment and from the in-school participation in the survey. The sample size in the third wave was 15,197 because of dropouts(UNC,2012).For this study, the total sample size for the final analysis was taken to be 2363 after accounting for missing cases.

### **Method of Data collection and Response Rate**

For in-home interviews, Computer -Assisted self-interviewing (CASI) was used and Audio computer assisted self interviewing was used for sensitive question. Self-administered

questionnaires were used for parents and school administrators. The response rate of the survey in the second wave was 88 percent whereas it was 77 percent in the third wave, and in the fourth wave, it was about 80 percent.

### **Outcome Variable- HIV risk-related sexual behavior**

The outcome variable of this study was HIV- risk- related sexual behavior of sexually active young adults taken from the third wave of the survey. A sexually active young adult was defined as a young adult of 18 to 27 years of age who had engaged in vaginal sexual intercourse during 12 months preceding the survey. The outcome variable was formed by combining two questions: whether or not young adults had multiple sexual partners in 12 months period and whether or not they used condom all the time in each of their sexual episode. Then, sexually active young adults were in HIV-risk related sexual behavior if they had multiple sexual partners and did not use condom all the time.

### **Independent Variables**

#### **Childhood Maltreatment**

Childhood maltreatment variable was derived from retrospective questions asked in wave three. For this, self-reported responses from the following questions were consider:

“By the time, you started 6th grade,

1. How often had your parents or other adult caregivers left you home alone when an adult should have been with you?
2. How often had your parents or other adult caregivers not taken care of your basic needs, such as keeping you clean or providing food or clothing?
3. How often had your parents or other adult caregivers slapped, hit, or kicked you?

The first and second questions were used to make parental or caregivers neglect as the childhood maltreatment. The third question was used to make physical abuse and fourth question was used to make sexual abuse by parents or caregivers.

### **Consistent Delinquency**

Consistent delinquency was used as other important independent variable. Young adults were considered consistent delinquent if they had done at least one delinquent activity in all three waves. Table 1 below shows the delinquent activities that were asked to respondents in all three waves during 12 months period preceding the survey. In order to be consistent in measuring delinquency, only common questions in three waves were used.

**Table 1 Items used to measure delinquency**

Item	Questions
1	Damaged property that does not belong to his/her
2	Stole something worth more than \$50
3	Went into a house or building to steal something
4	Used or threatened to use a weapon to get something from someone
5	Sell marijuana or other drugs
6	Stole something worth less than \$50
7	Took part in a fight where a group of his/her friends was against another group

For every frequency category answers (i.e. one or two times, 3-5 times etc) other than “never” category, a score of one was given, and for every “never” category answer, a score of zero was given in each wave. Respondents with at least one score in 7 questions were treated as delinquent. The reliability test for the delinquency was also done; Cronbach’s alpha was found 0.512. However, the Cronbach’s Alpha based on standardized items was 0.563.

Table 2 below portrays the operational definition of variables and their measurements.

**Table 2 Operational Definition of Variables and Measurement scale**

Variable Name	Data Wave	Description	Measurement scale
<b>Dependent Variable</b>			
<i>HIV-risk-related sexual behavior</i>	III	Whether or not sexually active young adults used condom each time with multiple sexual partners	Nominal 1=Yes 0= No
<i>Consistent Delinquency</i>	I,II,III	Whether or not respondents had done at least one delinquent activity in all three waves during 12 months period preceding the interview	Nominal 1=Yes 0= No
<b>Independent Variable</b>			
Childhood Maltreatment	III		
<i>Neglect</i>		Whether or not the respondent had parental or caregivers neglect history in the childhood	Nominal 1=Yes 0= No
<i>Physical Abuse</i>		Whether or not the respondent had any physical abuse history in the childhood	Nominal 1=Yes 0= No
<i>Sexual Abuse</i>		Whether or not the respondent had any physical abuse history in the childhood	Nominal 1=Yes 0= No
<b>Control Variables</b>			
<i>Sex</i>	I	Sex of the respondent	Nominal 1=Male 2=Female
<i>Age</i>	I	Completed years after the birth has taken place	Interval/ Ratio
<i>Race/Ethnicity</i>	I	Race /Ethnicity of respondent	Nominal 1=Non Hispanic White 2= Non-Hispanic Black 3=Hispanic 4=Others

**Methods**

Bivariate with chisquare test and multiple logistic regression were used for the analysis for complex sample design. IBM SPSS 19 statistical program was used for the analysis and complex sample design was accounted.

**RESULTS**

Table 2 shows the descriptive statistics of outcome as well as other independent variables. About 29 percent of sexually active young adults engaged in HIV-risk-related sexual behavior. More than 10 percent of young adults engaged in consistent delinquency. More than 43 percent of young adults had history of parental or caregiver neglects followed by 28 percent of young adults had physical abuse history from parents or caregivers. About 5 percent of young adults had sexual abuse history in the childhood.

In this study, sexually active males were about 49.1 percent and rest was female young adults. About 71 percent of young adults were non-Hispanic white followed by 15.2 percent of black. Hispanic young adults were only about 9 percent followed by about 5 percent of others race/ethnicity such as Asians, Pacific Islanders etc. The mean age of young adults was 21.40 ranging from 18 to 27 years of age. The sum of weights was 11650276.

**Table 2 Descriptive statistics of Dependent and Independent variables**

<b>Variables</b>	<b>Unweighted</b>		<b>Weighted</b>	
	<b>Frequency</b>	<b>%</b>	<b>Frequency</b>	<b>%</b>
<b>HIV-risk-related sexual behavior</b>				
<i>Yes</i>	755	29.3	3370195	28.95
<i>No</i>	1823	70.7	8272081	71.05
<b>Independent variables</b>				
<b>Neglect</b>				
<i>Yes</i>	1046	43.8	4733182	43.7
<i>No</i>	1343	56.2	6094299	56.3
<b>Physical Abuse</b>				
<i>Yes</i>	692	71.9	3170157	28.5
<i>No</i>	1771	28.1	7959012	71.5
<b>Sexual Abuse</b>				
<i>Yes</i>	119	4.8	539630	4.8
<i>No</i>	2367	95.2	10678078	95.2
<b>Consistent Delinquency</b>				
<i>Yes</i>	286	11.1	1357011	11.1
<i>No</i>	2294	88.9	10293264	88.9
<b>Demographic Variables</b>				
<b>Sex</b>				
<i>Male</i>	1212	47.0	5935466	49.1
<i>Female</i>	1368	53.0	5714810	50.9
<b>Race/ethnicity</b>				
<i>Non-Hispanic white</i>	1636	64.8	8095748	71
<i>Non-Hispanic Black</i>	559	22.1	1733164	15.2
<i>Black</i>	202	8.0	10185110	8.9
<i>Others</i>	129	5.1	552984	4.9

Table 3 shows the bivariate analysis of HIV-risk-related sexual behaviors and other independent variables. Childhood maltreatments were associated with HIV-risk-related sexual behavior among sexually active young adults. For instance, neglect and sexual abuse were found highly significant whereas physical abuse was found significant at 5 percent level of significance. About 32.9 percent of sexually active young adults who had a history of childhood parental or caregivers' neglect engaged in HIV-risk –related sexual behavior whereas only 25.4 percent of young adults without have such history engaged in such activities. About 40 percent

of young adults engaged in HIV-risk related sexual behavior who had sexual abuse history in the childhood whereas only about 27 percent of young adults engaged in such activities who did not have history of sexual abuse. About 33 percent of young adults with history of physical abuse engaged in HIV-risk related sexual behavior.

**Table 3 Percentage distribution of young adults in HIV-risk related sexual behaviors by independent variables**

Variable	HIV- risk -related sexual Behavior		chi square
	Yes	No	
<b>Childhood Maltreatment</b>			
<b>Neglect</b>			
<i>Yes</i>	32.9	67.1	15.952**
<i>No</i>	25.4	74.6	
<b>Physical Abuse</b>			
<i>Yes</i>	32.5	67.5	7.12*
<i>No</i>	27.1	72.9	
<b>Sexual Abuse</b>			
<i>Yes</i>	40.2	59.8	8.144**
<i>No</i>	28.1	71.9	
<b>Consistent Delinquency</b>			
<i>Yes</i>	45.4	54.6	44.749***
<i>No</i>	26.8	73.2	
<b>Sex</b>			
<i>Male</i>	33.8	66.2	30.811***
<i>Female</i>	23.9	76.1	
<b>Race/Ethnicity</b>			
<i>Non-Hispanic White</i>	28.2	71.8	13.890***
<i>Non-Hispanic Black</i>	36.1	63.9	
<i>Hispanic</i>	23.1	76.9	
<i>Others</i>	27.2	72.8	

In the same manner, consistent delinquency was also found significantly associated with HIV-risk-related sexual abuse. More than 45 percent of young adults, who engaged in consistent

delinquent behaviors, were found engaged in HIV-risk-related sexual behavior whereas only about 27 percent of young adults engaged in HIV-risk-related sexual behavior. Sex and Race/ethnicity were also found significantly associated with HIV-risk-related sexual behavior. About 33 percent of male young adults were found to engage in sexual behavior whereas only 24 percent of female young adults engaged in such activities. More than 36 percent of young black adults were found to engage in HIV-risk related sexual behavior followed by Whites.

### **Multivariate logistic Regression**

In the multivariate analysis, multiple logistic regression was used to find the effect of childhood maltreatment on HIV-risk –related sexual behavior among sexually active young adults. Three models were used. Table 4 shows the results of multiple logistic regression.

In the first model, only childhood maltreatments were included. It was found that those who had parental or caregivers neglect history were 36 percent more likely to engage in HIV-risk-related sexual behavior. Other childhood maltreatments were not found significant.

In the second model, consistent delinquency was included along with childhood maltreatments. Neglect variable did not lose its significance. Like in the first model, sexual abuse and maltreatments were not significant in the second model too. However, consistent delinquency was found highly significant. Those who had engaged in consistent delinquency, were 2.32 times more likely to engage in HIV-risk- related sexual behavior than those who did not engage in consistent delinquent activities.

In the final model, other demographic variables such as sex, age, and race/ethnicity variables were included. Childhood neglect and sexual abuse were found significant after adjusting for delinquency and demographic variables. Those who had history of sexual abuse

were 61 percent more likely to engage in HIV-risk-related sexual behavior whereas it was 31 percent higher risk in the case of those who had a history of parental or caregivers neglect.

**Table 4 Logistic Regression coefficients**

Variables	Model					
	I		II		III	
	B	Exp(B)	B	Exp(B)	B	Exp(B)
Intercept	-1.119***	0.327	-1.201	0.301	0.012	1.012
<b>Childhood Maltreatment</b>						
<i>Neglect (No=Ref)</i>	0.314**	1.368	0.279*	1.322	0.272*	1.312
<i>Physical Abuse(No=Ref)</i>	0.09	1.094	0.021	1.021	-0.027	0.974
<i>Sexual Abuse(No=Ref)</i>	0.309	1.362	0.4	1.492	0.477*	1.61
<i>Consistent Delinquency(No=Ref)</i>			0.842***	2.32	0.72***	2.06
<b>Sex (Female=Ref)</b>						
<i>Male</i>					0.385***	1.20
<i>Age</i>					-0.067^	0.937
<b>Race/Ethnicity(Non-Hispanic White=Ref)</b>						
<i>Non-Hispanic Black</i>					0.509***	1.577
<i>Hispanic</i>					-0.290	0.748
<i>Others</i>					-0.123	0.884

\*\*\*  $p < 0.001$  \*\*  $p < .01$  \*  $p < 0.05$  ^ significant at 0.1

Likewise, consistent delinquent young adults had two times higher risk of engaging in HIV-risk –related sexual behavior than non-consistent delinquents. In the same manner, Non-Hispanic Blacks were about 58 percent more likely to engage in HIV-risk-related sexual

behavior than Non-Hispanic white. Even though the association was negative for other racial groups, these are not significant. Moreover, male adults were 20 percent more likely to engage in sexual behavior than female young adults. Age was found significant at 0.1 level of significance only; one year increment in age drops down the likelihood of engaging in sexual risk behaviors by 7 percent.

## **DISCUSSION AND CONCLUSION**

Public use data from the nationally representative, National Longitudinal Survey of Adolescent Health from wave first, second and third data, collected from 1994-2001/2002, data were used to examine the impact of childhood maltreatments on HIV- risk-related sexual behavior among sexually active young adults of age 18 to 27 years. The results from the analysis suggest that almost one third of young adults engaged in HIV-risk-related sexual behavior – engage in multiple sexual partners and without condom in each episode of sexual activity.

For this study, the first research questions was –what is the impact of childhood maltreatments, specifically neglect, physical abuse and sexual abuse from parents or caregivers, on HIV-risk-related sexual behaviors among sexually active young adults ? We found that neglect was consistently significant to have positive effect on HIV-risk-related sexual behavior in all three models. This finding is consistent with the study of Wilson and Widow (2011). However, sexual abuse was not found significant in the first model but was found significant in the third model. From the bivariate and multivariate models, the first research question has been positively answered.

The second research question was – what happens to these effects after controlling for consistent delinquency? From the analysis, we found that even after controlling for consistent delinquency, neglect was significant and other childhood maltreatments were not significant,

however delinquency was found significant in this model. From this result, we can say that, childhood maltreatment especially neglects does not work through consistent delinquency. It has direct effect on HIV-risk related sexual behavior. Moreover, delinquency was also found highly significant; it has also independent effect on HIV-risk related sexual behaviors. This finding is consistent with the findings of Aalsma, et al. 2010 and not consistent with the findings of Stein, et al. 2010. Sometimes it is not appropriate to compare the results with previous studies because the variables might have been measured differently. The findings in the second model conclude that impact of sexual abuse was positively significant after controlling for consistent delinquency.

Third research question of this study was –what happened to these effects even after controlling for demographic variables? We found that childhood maltreatment neglect was significant even after controlling for consistent delinquency and other demographic variables. ; Physical abuse was not found to have significant effect on HIV-risk-related sexual behavior. However, sexual abuse was found significant after controlling for demographic variables. Since the maltreatment variation among males and females might be different – for example females are more likely to be maltreated sexually than males- this might have been the case for sexual abuse maltreatment turning significant in the final model. Other plausible reason for sexual abuse and HIV-risk related sexual behavior is that, according to Brown et al (2000) study, young people have low level of knowledge and low level of self-efficacy to condom use. Moreover, consistent delinquency, non-Hispanic black young adults, and male were found having positive effect on HIV-risk-related sexual behavior. Since sexual abuse was found significant after controlling for demographic variables, future research could explore some of the interaction effects of maltreatments and demographic variables. Some of the intervention program could be

designed based on these findings for black young adults with history of parental or caregivers' neglect and with history of sexual risk behaviors.

**Conclusion:**

From this study, we found that those young adults with a history of childhood parental or caregivers' neglect and history of sexual abuse were more likely to engage in HIV-risk related sexual behavior even after controlling for consistent delinquency and other demographic variables. Delinquency also has strong positive effect on HIV-risk related sexual behaviors.

**Limitation:**

There is couple of limitations for this study. The first limitation of the study is that this study does not cover all other socio economic variables such as individual's education and income of families that are also important predictors for HIV-risk-related sexual behavior. This study limited the sample to only those who had vaginal intercourse because of the non - availability of other forms of intercourse especially anal intercourse and homosexual activities. Other limitation is that this study does not include some of the parental, peer related, and contextual level variables. Future study should focus on these variables.

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