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Impacts of Early Sexual Experience and Associated Risk of Sexually Transmitted Infection (STI) among Teens and Adults in the United States

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ABSTRACT

This analysis explores incidence rates of sexually transmitted infections (STIs) among minority group teenagers (aged 15-19) and adults aged 20-34 in the United States. The primary research question is aimed at whether or not the early onset of sexual activity is directly related to the incidence of STI transmission among Americans. Discussion is given to the current literature with respect to the most recent trends in STIs as well as some historical background on classifications. Also examined are the differing impacts observed for those who are affected by bacterial infections (young minorities) and those who are affected by viral infections (majority group members with higher levels of education). The National Survey of Family Growth, Cycle 6, 2002 was used to obtain descriptive results presented in the form of tabular representations and logistic regressions that model the likelihood of contracting an STI for both teens and adults.

INTRODUCTION

Sexually transmitted infections (STIs) have come to the forefront of many scholarly journals and have even merited the creation of several new journals including *AIDS*, *Sexually Transmitted Diseases,* and *Sexually Transmitted Infections*. STIs are a problem of enormous import in the world today and are continuing to spread at alarming rates. Furthermore, they are increasingly affecting larger and larger populations. Specifically, there is a proliferation of certain infections such as HIV, now gaining footholds in the heterosexual populations in the United States and many other countries. In the United States, current trends indicate that the fastest growing population of those infected with HIV is the young heterosexual population. This paper explores the differing impacts of certain bacterial and viral infections as well as which populations are most at risk.

Though STIs are continually referred to as sexually transmitted diseases (STDs) in some journals, Sexually Transmitted Infections (STIs) is the most current and appropriate term to describe the infections. Previously referred to as venereal diseases (VDs) or sexually transmitted diseases (STDs), they are now known as infections for various reasons that are associated with the stigma surrounding the terms "venereal," "disease" and "sexually transmitted." Whereas a disease is indicative of a lifelong and potentially incurable affliction, infection is in reality the more appropriate referent given the advances in modern medicine, which have made most sexually transmitted infections curable and at the very least manageable. Presently, the only STI that carries a death sentence is the Human Immunodeficiency Virus and its resultant Acquired Immune Deficiency Syndrome (HIV/AIDS). But, even this STI can be kept at bay for a number of

years with proper treatment. Simply put, STIs have become increasingly common, and most may be completely cured or managed with medical treatment. Though advances have been made toward lessening the impacts of such infections, it is still quite necessary that they be faced head on and with public support. This paper points out that many different groups are being affected by several infections, and efforts must be put into place to slow the momentum of infection. As was stated previously, these are infections that can be completely cured and/or treated, and until they can be addressed as such, no headway can be made.

The general acceptance of the term STI is imperative for several reasons. It has been established that a stigma surrounds the term STD. This outlook must be addressed and overturned before any real prevention and treatment strategies can be implemented. The Centers for Disease Control identifies the American reluctance to address sexuality and its inevitable connection to the spread of STIs as a major barrier to effective prevention and treatment (2004). Thus, acceptance and transition into the term infection serve as a vital step in the battle to raise awareness and decrease rates of spread.

For the purposes of discussion, eight STIs have been identified in the United States according to the Centers for Disease Control and will serve as the main guide for identification. These eight infections are chlamydia, bacterial vaginosis (BV), gonorrhea, trichomoniasis, human papilloma virus (HPV), genital herpes, HIV/AIDS, and syphilis. Some of these infections are bacterial and may be completely cured; these include chlamydia, gonorrhea, trichomoniasis, and syphilis. The remaining infections are viral, meaning they have no cure, and include genital herpes, HPV and HIV/AIDS. In terms of

findings, self-reported responses are examined with regard to the incidence of these STIs (as available) in the United States.

In the United States, the reported number of cases of chlamydia is on the rise (with the most at risk group being adolescents) as is syphilis. Chlamydia is currently the most commonly reported STI in the United States and is especially common among young women ages 15-24 (MMWR 2005: 558). Another bacterial infection that has not been given as much attention as chlamydia and gonorrhea is trichomoniasis. This is because it does not have the same negative long term effects (i.e. PID). This particular bacterial infection affects mainly young women, and an estimated 7.4 million new cases are diagnosed each year (CDC 2005).

The transmission rates for the viral infections are also on an upward trajectory in the United States, and the impacts are particularly pronounced for those aged 15-24 (Weinstock, et. al 2004). The CDC reports that genital herpes is among the most common of the sexually transmitted infections reported with nearly one million new cases reported each year and that young adults have seen an astounding rise in risk levels over the past few decades (CDC 2000). Furthermore, it is referred to as a hidden epidemic and one that affects one in five individuals (CDC 2000). Human Papilloma Virus (HPV) is also a viral infection that is often linked to incidence of cervical cancer. Estimates are unclear as to whether the infections are gaining momentum; however, there is no indication that its impacts have lessened (CDC 2000).

In terms of the risk level associated with the different behaviors, the analyses are limited to self-reporting for the United States. Furthermore, the data on bacterial infections in the United States are additionally restricted due to the exclusion of

trichomoniasis as one of the STIs for which information was gathered. This is perhaps due to the assumption that trichomoniasis requires less attention than the previously mentioned infections because it does not have the same detrimental impacts. However, the available data on chlamydia and gonorrhea are sufficient to conduct an analysis of the possible repercussions of the spread of bacterial infections in the United States. Finally, information in the form of self-reported responses on viral infections is available and includes responses regarding genital herpes and Human Papilloma Virus (which may manifest as genital warts).

Both bacterial and viral infections should be given special attention for several reasons. The first reason and the one with the most potential for widespread devastation is that, "individuals who are infected with STDs are at least 2 to 5 times more likely than uninfected individuals to acquire HIV if they are exposed to the virus through sexual contact" (CDC 2005). These infections make an infected person more of a target for the HIV virus because they increase the concentration of cells that are more susceptible to infection (CDC 2005). Furthermore, they increase infectiousness given that infected persons shed more cells with HIV if they have another infection. Since these particular infections are spreading swiftly through the United States it is imperative to analyze the impacts of not only the infections themselves but the impacts they will have on the spread of HIV/AIDS. Bacterial infections are easily treatable and viral infections can certainly be managed. This makes it very clear that early detection and treatment can certainly help to alleviate the burden being placed upon young heterosexuals in the United States who are becoming increasingly susceptible to HIV infection.

Though HIV/AIDS is on the decline in the United States in most populations, this is not so among U.S. teenagers. Thus it becomes of great importance to include them for analytic purposes in this paper. Increases in HIV transmission are occurring among girls aged 13-19, most of whom have cited heterosexual contact as the main vessel for becoming infected (Caron, et al. 2004: 186). In fact, data from the Youth Risk Behavior Survey indicate that half of American high school students report having had sexual intercourse (Caron et al. 2004: 186). Kalmuss and colleagues have stated that "in the United States, the risk of acquiring an STI is higher among teenagers than among adults" (2003: 87). This trend is nothing short of alarming. Moreover, the implications of contracting STIs due to early sexual experience can be devastating, ranging from minor pain and irritation to chronic illness and even death. Sexually transmitted infections pose special risks because if left untreated they can cause permanent damage as well as amplify the transmission of HIV infection.

In the case of many of the STIs the CDC has identified, one of the major obstacles to their study in any country is the fact that they manifest themselves with no symptoms or with ambiguous ones. Many infected persons' symptoms are unrecognizable and as such go undetected. Another problem that has been identified with regard to the proliferation of STIs is the stigma associated with having a sexually transmitted infection. Many infected persons are reluctant to fully disclose information to health officials, notify their partners of infections, and/or seek treatment.

DATA AND METHODS

Available data for the United States include self-reported responses for several of the identified STIs and will differentiate between the viral and bacterial infections. A

variable for STI has also been constructed that will allow for an analysis of all the STIs reported on in the NSFG data set. This variable includes those respondents who reported yes to chlamydia, gonorrhea, syphilis, herpes and genital warts.

A major component of the paper involves analyzing the data from the 2002 National Survey of Family Growth (Cycle 6) (NSFG) for the United States. This is an extensive data set with information regarding sexual behavior and many other relevant topics. Also, the portion of the survey to be analyzed is not available for public use. A group of researchers at Texas A&M University, myself included, were granted express permission by the agents of the NSFG to use the sexuality portion for research relating to sexuality.

The interviewing, data processing, and data file production for Cycle 6 of the National Survey of Family Growth (NSFG), 2002, were conducted by the University of Michigan's Institute for Social Research (ISR), under a contract with the National Center for Health Statistics (NCHS) (NSFG 2002). The 2002 cycle of the NSFG was funded and planned by the U.S. Department of Health and Human Services in conjunction with nine other agencies including the CDC's National Center for Health Statistics. Cycle 6 of the NSFG was based on an area probability sample and is representative of the general population aged 15-44. Interviews pertaining to the NSFG, Cycle 6, were conducted from January 2002 to March 2003 by the Survey Research Center of the University of Michigan. They were in-person interviews that lasted approximately 60-80 minutes and involved 7643 women and 4928 men between the ages of 15 and 44. The NSFG data set contains information for a total of 12,571 males and females.

The data set was restricted for several reasons. First, only those that reported to being sexually active in some regard (i.e. vaginal, anal, or oral sex) were included in the sample. Also, if data was missing for any of the variables used, the observation was dropped. A final sample size of 10,455 was used for analytic purposes and included 6529 women aged 15-44 and 3926 males aged 15-45.

The ages of the respondents range from 15-44; however for the purposes of this analysis the age cohorts will be broken down into respondents aged 15-19, owing to the interest in STI risk for teenagers and on individuals aged 20-44 for the purposes of comparison. For females, information includes demographic data, pregnancy history, contraceptive use data, marital and cohabitation practices, fecundity data, birth expectations, infertility and sexual behavior data. The information on males includes demographic data, marriage and cohabitation practices, information on sexual partners, infertility data and birth expectations, among others.

For the U.S. teenagers the analysis will focus on persons aged 15-19, who are minority group members, and who have reported sexual activity. The variables analyzed will be the same as those analyzed for the adults and include whether or not early onset of sexual activity occurred, alcohol and drug usage (see Table 1). For the group aged 20-44 the focus will mainly be on education level, number of sexual partners, age at first incidence of sexual activity and minority status (see Table 2). For the purposes of this paper, the data set is restricted to information on those respondents who reported to having some sort of intercourse.

Frequency Distribution of Dependent and Independent Variables (US Teens: Males/Females; N=1144)										
Table 1	Chlamydia		Gonorrhea		Bacterial Infection		Viral Infection		Any STI ever	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
	N=554	N=590	N=554	N=590	N=554	N=590	N=554	N=590	N=554	N=590
Age										
15	0	3	0	1	0	3	0	1	0	4
16	0	2	0	2	0	3	1	1	1	4
17	3	4	0	2	3	5	1	2	4	7
18	2	6	0	4	2	6	2	5	4	11
19	2	4	2	1	3	5	2	11	4	16
Education										
≤ 9th grade	1	6	0	4	1	7		3	1	10
10th grade	1	5	0	2	1	5	0	2	2	7
11th grade	2	3	0	1	2	4	1	1	4	5
12th grade	0	3	0	2	0	4	2	8	2	12
1 yr college	3	2	1	1	3	2	2	4	3	6
2 yr college	0	0	1	0	1	0	1	1	1	1
3 yr coll +	0	0	0	0	0	0	0	1	0	1
Min. status										
minority	5	13	1	8	5	16	3	10	7	26
non-min.	2	6	1	2	3	6	3	10	6	16
Early sex										
< 16 yrs	5	16	1	9	5	19	5	15	9	34
≥ 16 yrs	2	3	1	1	3	3	1	5	4	8
# partners										
1	0	1	0	1	0	1	0	1	0	2
2	1	3	0	2	1	3	2	2	3	5
3 to 10	5	11	2	7	6	14	3	12	8	26
11 to 20	0	2	0	0	0	2	1	3	1	5
20 or more	1	2	0	0	1	2	0	2	1	4
Alc. use/yr										
never	1	4	1	3	2	5	1	3	3	8
1-2x	1	7	0	1	1	7	1	5	2	10
several	2	4	1	4	2	5	1	5	2	12
once/month	1	2	0	1	1	3	1	2	3	5
once/week	2	1	0	1	2	1	1	5	1	6
once/day	0	1	0	0	0	1	1	0	0	1
Drug use/yr										
never	2	7	1	3	3	8	2	8	5	16
1-2x	2	4	0	2	2	4	2	1	4	5
several	0	0	0	1	0	1	0	4	0	5
once/month	0	1	0	0	0	1	0	3	0	4
once/week	0	2	0	0	0	2	0	3	0	5
once/day	3	5	1	4	3	6	2	1	4	7
Totals	**7**	**19**	**2**	**10**	**8**	**22**	**6**	**20**	**13**	**42**

Frequency Distribution of Dependent and Independent Variables (US Adults: Male/Female; N=9813)										
Table 2	Chlamydia		Gonorrhea		Bacterial Infection		Viral Infection		Any STI ever	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
	N=3372	N=5939	N=3372	N=5939	N=3372	N=5939	N=3372	N=5939	N=3372	N=5939
Age										
20-29	24	36	15	12	31	43	47	182	69	222
30-39	8	13	10	8	11	17	95	329	100	341
44+	3	3	4	1	5	3	78	142	80	143
Education										
≤ 9th grade	3	8	3	5	4	9	12	33	13	40
10th grade	2	5	3	1	4	5	8	14	10	19
11th grade	1	1	1	2	2	3	5	23	6	26
12th grade	9	10	8	7	13	15	58	99	66	11
1 yr college	6	8	3	2	7	8	22	88	29	96
2 yr college	5	8	5	1	5	9	20	105	23	111
3 yr college	9	12	6	3	12	14	95	291	102	303
Min. status										
minority	23	39	20	16	33	47	94	204	116	245
non-min.	12	13	9	5	14	16	126	449	133	461
Early sex										
< 16 yrs	18	30	17	9	25	32	96	229	109	251
≥ 16 yrs	17	22	12	12	22	31	124	424	140	449
# partners										
1	4	3	4	0	5	3	11	23	14	25
2	0	5	0	1	0	6	6	21	6	27
3 to 10	15	25	9	15	20	33	66	343	79	369
11 to 20	7	12	5	2	8	13	57	141	63	153
20 or more	9	7	11	3	14	8	80	125	87	132
Alc. use/yr										
never	9	10	6	4	10	14	33	78	37	89
1-2x	3	8	3	4	5	10	25	111	27	119
several	2	10	4	5	4	12	22	121	24	132
once/month	4	12	4	5	5	14	32	105	35	118
once/week	11	8	5	1	14	8	73	185	83	192
once/day	6	4	7	2	9	5	35	53	43	56
Drug use/yr										
never	13	35	11	11	17	41	122	478	131	511
1-2x	6	8	3	3	8	8	21	68	29	75
several	2	4	4	1	4	4	13	35	16	39
once/month	1	1	1	2	1	3	12	19	12	22
once/week	6	2	4	0	7	2	16	24	21	26
once/day	7	2	6	4	10	5	36	29	40	33
Totals	**35**	**52**	**29**	**21**	**47**	**63**	**220**	**653**	**249**	**706**

Descriptive Results

Table 1 displays how disproportionately affected females are than males. It was postulated in previous research that this could be due to a higher incidence of testing among females. But in each and every category, the female frequencies are higher by almost 3 times, sometimes more. Part of this could be accounted for by the previous explanation. However, it seems unlikely that this would account for the entire gender gap. For teens, higher frequencies of bacterial infections were detected among minority group members and those who reported an early onset of sexual activity with regard to every measure of infection (i.e., chlamydia, gonorrhea, both, viral STI, or any STI). However, minority and majority group members were equally at risk for contracting viral infections. This confirms the results of prior studies that point to these variables as strong predictors of STI incidence. The majority of those who reported some kind of infection also reported a number of sex partners in the range of 3 to 10. This contradicts the finding that increased incidence will be detected as number of sex partners increases. However, this range could still be considered moderate, and the high levels of infection found in this group could be attributable to underreporting with regard to number of sex partners and/or discrepancies in reporting. Alcohol and drug use do not seem to have as great an impact as was expected, but the absolute numbers of those reporting infection were small and fairly widely dispersed among the categories. So, we may not have a clear picture of the true impacts these variables have on STI incidence level. We will be able to appraise more adequately these two variables when we estimate the logistic regression equations.

Table 2 presents the findings for the US adult population. It too is separated into the same five categories listed above. The numbers are presented in raw format and represent the exact number of respondents who reported having any of the identified infections. The results are further separated by gender.

In the U.S. adult population, females are much more strongly impacted than men (with the exception of gonorrhea). If we look at the results for any STI ever, almost 3 times more women reported to some type of infection than men. The highest number of women reporting infection was in the 30-39 age categories. This is contrary to the findings of prior studies, which indicate that risk level decreases as age increases. Also, interestingly, a large proportion of the women who indicated having some type of infection were those with a college degree. Thus, two separate risk groups were found with the education variable; bacterial infections were more prevalent for those with a high school education and viral infections were more prevalent for those with a college degree. Minority status generated a higher incidence of infection with respect to the bacterial infections, but this was not observed with respect to the variables for viral or any STI. Also, because most of the adult population did not indicate an early onset of sexual activity, this variable did not seem to have as much impact on them. As was observed with the teens, the majority of infections tended to be found among those who reported 3 to 10 sex partners. In terms of alcohol consumption, the highest frequencies of infection were found among those that reported to drinking once per week. Finally, the highest rates of infection were reported among those who reported never using drugs in all cases.

Operationalization of variables for the United States

The U.S. data will be analyzed according to the dependent variable for likelihood of contracting an STI. It is measured in five ways. The first is the variable 'chlam1', a binary dependent variable, with a value of one representing a positive response to the question, "In the last 12 months, have you been told by a doctor or other medical care provider that you had chlamydia?" The second dependent variable is 'gon1', a binary dependent variable, with a value of one representing a positive response to the question, "In the last 12 months, have you been told by a doctor or other medical care provider that you had gonorrhea?" The third dependent variable is 'bac'. This variable was constructed by combing the affirmative answers to questions about having either gonorrhea or chlamydia (or both) in the last twelve months. Next, a dependent variable was created to model the viral infections 'viralSTI', a binary dependent variable indicating whether or not the individual has ever been told they have a non-bacterial STI. Last, a variable was created to include any of the STIs mentioned on the NSFG questionnaire with a variable name 'STI'. These infections are gonorrhea, chlamydia, herpes, genital warts and syphilis. The information provided for the bacterial infections was gathered for the last 12 months; syphilis, herpes and genital warts responses were based on lifetime reporting. As noted, these five variables are dummy variables, coded one for yes and zero for no.

Several independent variables have been identified as being strongly correlated to the incidence of STI transmission in the United States population. These variables are gender, age, level of education, minority status, early onset of sexual activity, number of sexual partners, alcohol consumption, and drug usage. Two sets of tabular results for the U.S. adults and teens are presented. The description of the variables is the same with the

exception of the age variable. For the U.S. teens, age is broken down into single years, i.e. 15 through 19.

These dependent and independent variables should provide a clear picture as to the prevalence of STIs in United States for the adult and teen aged population, and the characteristics associated with STI prevalence. They will also adequately detail the most at-risk groups within the population.

Modeling Binary Outcomes

In the case of each of the dependent variables the outcome will be binary. In other words, the dependent variable allows only two options as a result. The negative response is typically signified by a zero and a positive response is signified by a one. Accordingly, an answer in the affirmative is coded as a one and a negative response is coded as a zero. Logistic regressions are employed in order to examine the probability of the specified event occurring. For example, what are the odds that a person will have reported to contracting an STI when one takes into account the effects of several independent variables? For the purposes of this paper it is necessary to utilize logistic regression as it allows a model to be constructed in which the results are within the bounds of one and zero (Long and Freese 2003: 113).

Logistic Regression Results

The results for the U.S. teens (Figure 1) and U.S. Adults (Figure 2) indicate that many of the previously hypothesized relationships are, in fact evident among this sample. Model 1 indicates the results of the responses to the question pertaining to whether or not the respondent had chlamydia in the past year. Model 2 indicates the results of the same question in reference to gonorrhea. Model 3 displays the results of both bacterial

infections combined. Next, Model 4 displays the results for whether the respondent reported to any non-bacterial STI (genital warts or herpes). Last, Model 5 displays the results for whether the respondent reported to any of the identified STIs (chlamydia, gonorrhea, syphilis, genital warts, and herpes).

Logistic Regression Results (U.S. Teens: Male/Female; N=1144)					
Figure 1	Model 1 (Chlamydia)	Model 2 (Gonorrhea)	Model 3 (Chlam./Gon.)	Model 4 (Viral)	Model 5 (Any STI)
	Logits Odds Ratios	Logits Odds Ratios	Logits Odds Ratios	Logits Odds Ratios	Logits Odds Ratios
Socio-demo. Characteristics					
Gender	-1.47*** .23	-1.84** .16	-1.46*** .23	-1.36*** .26	-1.58*** .21
Education Level	-.35** .71	.002 1.00	-.28** .75	.18 1.20	-.10 .91
Minority Status	.81* 2.25	1.07* 2.92	.86** 2.37	.00 1.00	.43* 1.54
Early Onset Sexual Activity	.23 1.25	1.07 2.92	.29 1.33	.85* 2.33	.50* 1.65
# Sex Partners	.11*** 1.11	-.02 .98	.10*** 1.11	.11*** 1.11	.12*** 1.12
Alcohol Consumption	-.001 .99	-.03 .97	-.002 .10	-.00 1.00	-.001 .99
Drug Usage	.004*** 1.00	.01*** 1.01	.003*** 1.003	.00 .999	.002** 1.002
Constant	-.91	-5.56*	-1.48	-6.64	-2.72**
Pearson Chi-Squared	36.50***	25.80***	39.58***	23.57***	54.00***
Pseudo R-Squared	.15	.19	.14	.10	.12
Log Likelihood	-105.84	-53.73	-119.05	-119.05	-193.58
N	1144	1144	1144	1144	1144
Degrees of Freedom	7	7	7	7	7

Significant at .1 (*)
Significant at .05 (**)
Significant at .001 (***)

Logistic Regression Results (U.S. Adults: Male/Female; N=9311)					
Figure 2	Model 1 (Chlamydia)	Model 2 (Gonorrhea)	Model 3 (Chlam/Gon.)	Model 4 (Viral)	Model 5 (Any STI)
	Logits Odds Ratios	Logits Odds Ratios	Logits Odds Ratios	Logits Odds Ratios	Logits Odds Ratios
Socio-demographic Characteristics					
Gender	-.2 .82	.46* 1.59	-.12 .89	-1.10*** .33	-1.05*** .35
Age	-.86*** .42	-.40** .67	-.80*** .45	-.344*** 1.41	.23*** 1.25
Education Level	-.06* .94	-.15** .86	-.08** .92	.11*** 1.11	.09*** 1.09
Minority Status	.98*** 2.65	.97*** 2.64	1.06*** 2.89	-.32*** .72	-.17** .85
Early Onset Sexual Activity	.55** 1.74	.20 1.22	.34* 1.41	.16** 1.17	.17** 1.19
# Sex Partners	.05** 1.05	.05** 1.05	.05*** 1.05	.10*** 1.11	.10*** 1.10
Alcohol Consumption	.002* 1.00	.002* 1.002	.002** 1.002	.000** 1.000	.00*** 1.00
Drug Usage	.001 1.00	.003*** 1.003	.002** 1.002	.002*** 1.002	.002*** 1.002
Constant	-2.92***	-3.72***	-2.65***	-5.42***	-4.8***
Pearson Chi-Squared	80.99***	56.99***	105.41***	596.08***	554.70***
Pseudo R-Squared	.08	.09	.09	.10	.09
Log Likelihood	-452.65	-282.72	-544.87	-2599.096	-2801.67
N	9311	9311	9311	9311	9311
Degrees of Freedom	8	8	8	8	8

Significant at .1 (*)
Significant at .05 (**)
Significant at .001 (***)

The regression results indicate that in the majority of cases, the hypotheses were supported. In the United States population, gender, age, education, minority status, early onset of sexual activity, and number of sex partners all performed as expected (with a few exceptions). The impacts of the variables measuring the alcohol consumption and substance usage were too minimal to analyze.

The research for the United States samples on bacterial infections indicated the clear risk for minorities between the ages of 15 and 19. Further risk factors include "risky behavior" defined by substance use and/or abuse. The models for the United States focused on teens only and on adults, so that these particular risk groups could be analyzed. It was expected that age, education, and male sex should all have inverse relationships with the dependent variable – likelihood of contracting a bacterial STI. Furthermore, a positive relationship was expected between minority status, early onset of sexual activity, high numbers of sex partners, and substance use and the dependent variable.

With the respect to the U.S. teens, these relationships were mostly confirmed. In terms of chlamydia, significant relationships were observed for the variables representing gender, education, minority status, number of sex partners, and drug usage, and in the directions expected. Female minorities in particular are being adversely impacted by this infection. As an example, minorities are 137% more likely to report having been infected with a chlamydia in the last 12 months, all else equal. The findings for gonorrhea were not quite as definitive (due to such a small percentage of reported infections), but significant relationships were still observed for gender, minority status and drug usage. When the effects of the bacterial infections were combined, the strength of the

relationships increased; and significant relationships were observed for gender, education, minority status, number of sex partners and drug usage. As for the viral STIs, the relationships observed do not tend to coincide with common beliefs in terms of who is most heavily impacted by the infections. In the case of these STIs, much higher rates were detected among those in older age groups, with higher levels of education and who belonged to the majority group. These infections seemed to be marked by exactly opposite indicators as those for the bacterial infections. Finally, for all of the combined STIs, gender, minority status, early onset of sexual activity, number of sex partners and drug usage were all found to have significant relationships with the dependent variable. Only here and in the case of the viral STIs was support found for the original hypothesis that early sexual activity contributes to the likelihood of contracting an STI.

The U.S. adults had the same risk factors as the teens although the results were quite different than those observed among the U.S. teens. The chlamydia results indicated significant relationships for age, education, minority status, early onset of sexual activity, number of sex partners, and alcohol consumption. These relationships did perform in the directions expected. Among the adults, alcohol consumption was a risk factor for contracting chlamydia that was not observed among the teens. The gonorrhea results were as expected; the only relationship that was not confirmed was that of early onset of sexual activity. When the two bacterial infections were combined, the only variable that did not have a significant impact was gender. Finally, some very interesting findings were discovered with respect to the U.S. adults and the dependent variable for viral STIs (Model 4). Males were indeed less likely to contract an STI. However, age, education, and majority status all displayed positive relationships with the

dependent variable. Finally, similar effects were observed for Model 5. Here we saw too that males are indeed less likely to contract an STI, and that number of sex partners, early onset of sexual activity, and substance use all vary positively with the likelihood of infection. However, the remaining variables showed relationships opposite to what has previously been assumed.

In the fourth and fifth models, increases in age and education are associated with an increase in risk of infection. Upon further analysis, it seems as though the majority of these cases may be attributable to genital warts and herpes among those with a college education. Thus, an increase in education is actually associated with an 11 and 9 percent increase in likelihood of infection, respectively, other things equal. Also, a decreased likelihood was observed for minorities in this model. Again, this may well be attributable to the majority of herpes and genital warts infections being detected among whites. These findings were certainly not expected, and previous research points in the opposite direction in terms of risk factors.

CONCLUSION AND FUTURE RESEARCH

In light of the previous findings, future work on the rates and prevalence of STIs in the United States should be dually focused. First, young minorities are obviously at an increased risk for contracting the bacterial STIs, in particular. It is imperative that this situation be addressed as these infections are associated with a number of complications in their own right; they also contribute to the likelihood of infection with HIV/AIDS. Also, because early onset of sexual activity has been confirmed as a contributor to likelihood of infection, it should be brought to the public's attention that young people who engage in early sex are at increased risk of contracting bacterial infections.

Second, this newfound group of college educated whites who are infected with viral infections (genital warts and herpes) should be addressed. This is not a group for whom prevention strategies are focused, because they are rarely seen as an at-risk group. This is a mistaken notion. Also, any infection creates an increased risk of infection for HIV/AIDS and these viral infections are incurable. These groups need to be analyzed with more vigor, and further studies should have a special focus on them.

If given the opportunity to do another analysis, a survey focusing on young members of the U.S. population would be especially helpful given that some of the previous analyses were limited because a smaller group of teens versus adults were interviewed in the National Survey of Family Growth. The results showed that U.S. teens are impacted differently than U.S. adults. Thus, the variables that impacted the teens differently (minority group membership and early onset of sexual activity) would need to have a special focus.

It also seems that it is also necessary to include more of a discussion on the part of the interviewers with respect to sexual activity. Though it has not been proven, I suspect that underreporting in terms of the number of one's sexual partners exists in the National Survey of Family Growth. It would be preferable that the portion of the survey related to sexual behavior be prefaced with more information than just the fact that the respondent's answers will remain confidential.

STI incidence is a major concern in the U.S. Cohen has stated that Kalmuss and colleagues have stated further that, "rates of unprotected sexual activity, STIs, pregnancy and child-bearing continue to be substantially higher among U.S. adolescents than among young people in comparable industrialized countries" (2000: 87). U.S. teens are very

much at risk of contracting a bacterial STI. Furthermore, adults in the United States are equally at risk as the findings in this analysis have illustrated. We cannot afford to ignore this problem and must develop a strategy to decrease these levels.

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