

Sexually Transmitted Infections in a Probability Sample of Adolescents in Baltimore, MD

Sexually active adolescents and young adults are at higher risk for acquiring sexually transmitted infections (STIs) than adults over age 25, for a combination of behavioral, biological, and cultural reasons. Recent estimates suggest that 15-to-24-year-olds, while they represent just 25% of the ever-sexually active population, acquire nearly half of all new sexually transmitted infections each year in the U.S. (CDC, 2006). In a national sample of 838 female adolescents ages 14-19, 26% tested positive for at least one of four common STIs (human papillomavirus infection, chlamydia, herpes simplex virus type 2 infection, and trichomoniasis) (CDC, 2008).

STI prevalence varies considerably by geographic location and among demographic and socioeconomic subgroups. STI epidemics are community-based phenomena, so national incidence and prevalence data are inadequate to understand the dynamics of such ongoing epidemics. The Monitoring STIs Survey Program (MSSP) is designed to provide continuous monitoring of trends in undiagnosed STIs in Baltimore, MD, a city with both a high incidence of diagnosed STIs based on reports to public health authorities and a high prevalence of undiagnosed STIs based on evidence from past population surveys (Centers for Disease Control, 2006; Turner et al., 2002). The MSSP conducts repeated surveys of probability samples of Baltimore residents, aged 15-35 years, in order to monitor infection prevalence over time in the overall population in this age range, as well as among subgroups. Participants complete automated telephone interviews using T-ACASI (telephone audio computer-assisted self-interviewing) and mail in self-collected urine specimens for laboratory testing to detect the presence of three STIs—chlamydia, trichomoniasis and gonorrhea. Data collection began September 2006.

In this presentation we will report findings on the prevalence of undiagnosed sexually transmitted infections among Baltimore adolescents aged 15-19 using data from the first two years of the MSSP survey. We also examine variations in STI prevalence and reported risk behaviors by race and gender. Estimates of infection prevalence and distributions of demographic and behavioral characteristics are weighted to adjust for unequal probabilities of selection and nonresponse.

Preliminary Results

In the first year of the MSSP, 335 adolescents aged 15-19 completed a TACASI survey. (Year 2 data will be available in Nov. 2008.) Nearly 80% of respondents were black or African American; 15.6% were nonblack; 4.8% reported their race as “other;” and 0.6% were Asian. Approximately 45% of adolescent participants were female. 72% (n=242) of adolescents who completed the survey provided a urine specimen for testing.

STI prevalence among all 15-19-year-olds

As indicated in Table 1, nearly 13% of adolescents who provided a urine specimen tested positive for an STI – 8.5% had chlamydia (Ct), 4.6% had trichomoniasis (Tv), and one female tested positive for gonorrhea (GC) (data not shown). STIs prevalence among females, 14.0%, was slightly higher than among males, 11.0%. The most notable difference in STI prevalence among subpopulations is seen when comparing adolescents by race. Approximately 14% of black adolescents who submitted a urine specimen had an STI, while just one nonblack adolescent tested positive for any of the three infections. (This participant reported his race as “other.”) STI prevalence was highest among black females, with 17% testing positive for an infection.

Table 1. Sexual activity (n=335) and sexually transmitted infections (n=242) among adolescents aged 15-19 years, by gender and race. Baltimore MD, 2006-2007.

	Infected with Ct, Tv or GC (%)	Experienced sexual intercourse (%)
All 15-19 year-olds	12.6 (n=242)	71.5 (n=335)
Males	11.4 (n=100)	68.9 (n=145)
Females	14.0 (n=142)	74.6 (n=190)
Black/African American	14.3 (n=194)	77.8 (n=273)
Nonblack	6.4 (n=48)	47.1 (n=62)
Black females	16.6 (n=115)	79.5 (n=156)

Racial differences in sexual experience could help explain the black-nonblack difference in STI prevalence. Approximately 72% of all adolescents who completed a TACASI interview in Year 1 of the MSSP reported having experienced vaginal or anal sexual intercourse (Table 1, Column 2). Females were slightly more likely than males to have engaged in sexual intercourse (75% v. 69%). Black adolescents were far more likely than nonblacks to report having been sexually active – 78% v. 47%. Among black females, 80% reported having experienced sexual intercourse.

STI prevalence among sexually active adolescents

Among the 174 participants who reported in the TACASI that they had experienced vaginal or anal intercourse (and submitted a urine specimen for testing), racial differences in STI prevalence were still evident but are attenuated. Among all sexually active adolescents, 17% tested positive for an infection -- 18% of blacks and 12% of nonblacks (Table 2).

Table 2. Sexually transmitted infections among adolescents with sexual experience, aged 15-19 years. Baltimore MD, 2006-2007.

	Infected with Ct, Tv or GC (%)
All 15-19 year-olds with sexual experience	17.4 (n=235)
Black, sexually experienced	18.3 (n=205)
Nonblack, sexually experienced	12.2 (n=30)

STI history and risk factors among sexually active adolescents

MSSP participants completed TACASI interviews that included questions about their past STI history and their sexual behaviors (Table 3). Among the 235 adolescent TACASI respondents who reported being sexually experienced, 86.5% were black. Nearly 17% of sexually experienced black adolescents reported having been diagnosed with an STI (Ct, Tv or GC) in the past, compared to 1% of nonblacks. 8% of blacks and 1% of nonblacks reported having been diagnosed with an STI in the past year. However, 12% of both blacks and nonblacks report having an STI symptom (dysuria or vaginal/penile dripping or discharge) in the previous three months.

An overall pattern of racial differences in risk behaviors that have been associated with sexually transmitted infections in previous research was not evident. Some purported risk behaviors were more prevalent among black than nonblack adolescents -- blacks were significantly more likely than nonblacks to have had more than one sexual partners in their lifetimes (81% v. 42%) and in the past year (54% v. 29%). However, nonblack adolescents were more likely to have had sex while drunk or high -- 52% v. 24%. Other

racial differences in reported risk behaviors were not statistically significant, perhaps due to the small number of nonblack adolescents who were sexually experienced.

	All (n=235)	Black (n=205)	Nonblack (n=30)	p-value
Item				
STI diagnosis (Ct, GC, Tv), ever	14.4	16.5	1.1	<.000
STI diagnosis in past year	7.0	7.9	1.1	.025
Dysuria or discharge in past month	12.4	12.4	12.4	.996
>1 sexual partner, ever	75.6	80.9	41.7	<.000
>1 sexual partner in past year	50.3	53.6	29.3	.050
Ever had same-sex partner	4.1	4.7	0	na
Last sexual partner >3 yrs older/younger	11.5	12.0	7.8	.503
Had anal sex in past year	15.8	15.4	18.5	.650
Used condom, last sex	63.2	65.0	51.1	.280
Had sex while high/drunk in past year	27.4	23.5	51.7	.049

Discussion

Nearly 13% of Baltimore adolescents aged 15-19 in our study sample had an undiagnosed sexually transmitted infection, with black adolescents more likely than nonblacks to be infected -- 14% v. 6%. Racial disparities in sexual experience partly explain the racial difference in STI prevalence; 78% of black adolescents had experienced sexual intercourse, compared to 47% of nonblacks. However, even among sexually experienced adolescents, STI prevalence among blacks was higher than among nonblacks, although difference is reduced. While some sexual risk behaviors associated with STIs were more commonly reported among black adolescents, others were more prevalent among nonblacks, suggesting that further research into the underlying causes of racial disparities in STI prevalence among adolescents is needed, including the exploration of risk factors not measured in this study.

In concluding, we note that the MSSP sample size from the first year of data collection provides relatively weak statistical power for detecting differences between black and nonblack adolescents. In our conference presentation, we will present results that include the second year of MSSP data.

References

Centers for Disease Control and Prevention (2006) Sexually Transmitted Disease Surveillance 2006. Atlanta, GA: U.S. Division of Health and Human Services, November 2007. <http://www.cdc.gov/std/stats/tables/table6.htm>

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