PUBLIC HEALTH

Oral contraceptive use may not preclude condom use: a study of non-pregnant African-American adolescent females

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Objective: To determine the association between oral contraceptive and condom use, and laboratory-confirmed sexually transmitted infection (STI) among African-American adolescent females at a high risk of STI acquisition.

Methods: A cross-sectional study of 715 African-American adolescent females (15–21 years old) was conducted. Data collection included (a) an audio-computer-assisted self-interview and a self-collected vaginal swab for nucleic acid amplification testing of *Trichomonas vaginalis*, *Chlamydia trachomatis* and *Neisseria gonorrhoeae*.

Results: The age-adjusted odds ratio (AOR) indicated a modest protective effect of oral contraceptive use against unprotected vaginal sex (UVS) using a 60-day recall period (AOR=0.66; 95% CI 0.43 to 0.99). The age-adjusted difference in mean frequency of UVS in the past 60 days was non-significant ($p=0.23$) as was condom use at last sex ($p=0.34$). The age-AOR relative to STI prevalence also showed a protective effect (AOR=0.60; 95% CI 0.36 to 0.98) for those using oral contraceptives.

Conclusion: The findings suggest that the use of oral contraceptives may not preclude safer sex practices for the prevention of STIs among high-risk African-American adolescent females.

Several studies have found that adolescent females use condoms primarily for preventing pregnancy rather than preventing sexually transmitted infection (STI).^{1–3} Moreover, research has found that adolescents who adopt other methods of contraception abandon condoms as a form of protection.⁴ For example, studies of adolescents and young adults have consistently found that condom use is less likely to be reported by females who use hormonal contraceptives.^{5–8}

A study that specifically investigates whether oral contraceptive use precludes condom use among a population for heightened risk of STI is warranted. Given the fact that African-American adolescent females living in the southern US have a particularly high rate of STIs, they constitute such a population.^{9–12} Accordingly, this study tested the association between the use of oral contraceptives and condom use, and biologically confirmed STI prevalence among a sample of African-American adolescent females recruited from a large metropolitan area of the southern US with high incidence and prevalence of STIs.

METHODS

Study sample

Participants were 715 African-American adolescent females enrolled in a randomised trial of an HIV Prevention Programme. Only data collected at baseline (before any intervention occurred) were used for this study. Recruitment sites were an urban, publicly funded, sexually transmitted disease clinic, a teen clinic based in a large public hospital, and a family-planning clinic. From March 2002 to August 2004, project recruiters screened 1558 teens to assess eligibility. Adolescents were eligible to participate if they were African-American females, aged 15–21 years and reported sexual activity in the past 60 days. Exclusion criteria were being married, pregnant or attempting to become pregnant. Of the 1558 screened, 874 adolescents were eligible and were asked to participate in the study. The study achieved an 82% baseline participation rate ($n=715$). The Institutional Review Board at

Emory University, Atlanta, Georgia, USA, approved the study protocol prior to implementation.

Data collection

Data collection included an audio-computer-assisted self-interview lasting about 60 min and a self-collected vaginal swab for nucleic acid amplification testing to detect *Trichomonas vaginalis*, *Chlamydia trachomatis* and *Neisseria gonorrhoeae*. Participants were compensated \$50.

Self-reported measures

Oral contraceptive use was assessed by a single question presented in a series of questions pertaining to contraceptive practices: "are you on the pill?" Frequency of penile–vaginal sex and frequency of condom use during penile–vaginal sex was assessed for retrospective recall period of 60 days. Subtracting the frequency of condom use from the frequency of penile–vaginal sex yielded a measure of unprotected vaginal sex (UVS). This method of assessment gives a far more precise estimate of STI risk than simply counting the number of times the condoms were used.¹³

Laboratory-assessed measures

Adolescents were instructed about the process of self-collecting a vaginal swab specimen that was subsequently evaluated for *T vaginalis*, *C trachomatis* and *N gonorrhoeae*. *T vaginalis* was assayed using a real-time PCR assay.¹⁴ *C trachomatis* and *N gonorrhoeae* were initially assayed using the Abbott LCx Probe System^{15–17} (Abbott Laboratories, Abbot Park, Illinois, USA). However, in September 2002, this Abbot assay was discontinued, and we began using the BDProbeTec ET chlamydia trachomatis and neisseria gonorrhoeae amplified DNA assay (Becton Dickinson, Sparks, Maryland, USA).¹⁸

Abbreviations: STI, sexually transmitted infection; UVS, unprotected vaginal sex

Data analysis

Only adolescents reporting penile–vaginal sex during the recall period were included in the analyses ($n = 566$). UVS was analysed both as a continuous and dichotomous variable. The dichotomous variable compared those reporting any UVS to those reporting that they had not engaged in UVS. Bivariate associations between oral contraceptive use and UVS (continuous) were assessed by independent groups' t test. Linear regression was used to adjust for age. χ^2 analysis tested the association between oral contraceptive use and UVS (dichotomous), and prevalence of STI. Logistic regression was used to adjust for age.

RESULTS

Characteristics of the sample

Average (SD) age was 17.8 (17.2) years. About three-quarters (75.8%) resided with at least one family member. Most (65.3%) were students currently enrolled in school. Overall, 206 (28.8%) tested positive for an STI and 106 (14.9%) reported current use of oral contraceptives.

Bivariate associations

Among those using oral contraception, 50.5% reported one or more episodes of UVS in the past 60 days (dichotomous measure) as compared to 61.2% of those not using oral contraception ($p = 0.04$). Among users of oral contraceptive, the mean frequency of UVS in the past 60 days (continuous measure) was 5.05 compared to 7.29 among those not using oral contraception ($p = 0.058$). Finally, 20.8% of those using oral contraception tested positive for an STI compared to 30.3% of those not using oral contraception ($p = 0.04$).

Age-adjusted analyses

After controlling for age, oral contraceptive use relative to UVS retained significance such that users were less likely to engage in UVS ($p = 0.048$; adjusted odds ratio (AOR) = 0.66; 95% CI 0.43 to 0.99). Differences in mean frequency of UVS (past 60 days) remained non-significant ($p = 0.23$). The significant bivariate difference relative to the prevalence of sexually transmitted disease remained after controlling for age ($p = 0.043$; AOR = 0.60; 95% CI 0.36 to 0.98).

DISCUSSION

Contrary to past findings, we did not find an inverse association between oral contraceptive use and UVS among this sample of African-American adolescent females at a high risk of STI acquisition. In fact, we found that adolescents using oral contraceptives had less UVS and were less likely to test positive for an STI. These findings suggest that use of oral contraceptive does not preclude the practice of safer sex to prevent the acquisition of STIs among African-American females who are at a high risk. This observation is potentially important because it implies that this sample of adolescent females at high risk may be acting responsibly by negotiating safer sex to prevent STI acquisition in addition to their choice to use oral contraceptives for prevention of pregnancy.

Whether the observed effect is attributable to public health messages or clinic-based counselling that promotes dual-method use is unclear, and may be worthy of further investigation. Given the urgency of preventing STIs among African-American adolescent females, it may be prudent to understand why the adolescents in this study, who used oral contraceptives (to prevent pregnancy) also used condoms more consistently. Identifying the relevant factors related to them making choices to avoid both pregnancy and STI may serve as a starting point for the promotion of 100% condom use. Clinic-based opportunities for such promotion efforts could easily be

Key messages

- Contrary to past findings, use of oral contraceptives may not preclude safer sex practices for the prevention of STIs among high-risk African-American adolescent females
- In this sample of high-risk adolescent females, those using oral contraceptives were significantly less likely to report engaging in an UVS in the past 60 days. This finding suggests that their negotiation of safer sex to prevent STI acquisition occurs in addition to their choice to use oral contraceptives for prevention of pregnancy
- Further investigation is needed to identify psychosocial factors that may predispose African-American adolescent females to protect themselves from both pregnancy and STI
- Identification of these factors may serve as a starting point for the promotion of 100% condom use among those using oral contraceptives

linked with gynecological examinations and renewal of oral contraceptive prescriptions.

LIMITATIONS

Although findings from any study on human sexual behaviour are limited by the use of self-reported measures, this limitation may have been minimised by the use of audio-computer-assisted self-interview reporting.¹⁹ The use of a convenience sample and the cross-sectional study design are also potential limitations. Also note the fact that <4% of the sample reported the use of hormonal methods other than oral contraceptives. This low prevalence did not allow us to investigate whether the use of other hormonal methods may be similarly associated with UVS and STI. Thus, findings are limited to use of oral contraceptives. Future studies that build from this initial set of findings should be prospective and may include other populations of high-risk adolescents. Future studies should also specifically investigate the reasons as to why African-American adolescent females using oral contraception may be less likely to engage in UVS and to acquire STIs.

CONCLUSION

Findings suggest that the use of oral contraceptives may not preclude safer sex practices for the prevention of STIs among high-risk African-American adolescent females. Continued vigilance in promoting STI-protective behaviours to adolescent users of oral contraceptive may be beneficial.

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