Extended Abstract

Understanding High Levels of Sexually Transmitted Infections in the United States: A Comparative Analysis of Self-Reported STI Rates in Three Developed Countries

Kirsten P. Smith*

Annual Meeting of the Population Association of America,
Los Angeles, March 30-April 1, 2006

* Department of Health Care Policy, Harvard University, 180 Longwood Ave., Boston, MA 02115.

Specific Aims

In this paper I use nationally representative, individual-level data from the United States (US), Britain, and Finland to evaluate whether indicators of sexual culture and access to and quality of health care contribute to differences among countries in sexually transmitted infection (STI) rates, as we would expect based on the dominant explanations in the literature for cross-national STI differentials. Since certain demographic characteristics are commonly associated with STI risk, I additionally assess the contribution of these factors to risk differentials within and between countries. Due to dramatically higher STI rates among blacks than non-blacks in the US, I focus in particular on racial/ethnic differences. By exploring factors that contribute to cross-national STI differentials, this study advances understanding of why the US has higher STI rates than most other developed countries.

Background, Significance, and Research Objectives

Explanations for cross-national differences in STI rates: Despite having the highest per capita expenditures on health care in the world (Anderson and Hussey 2001), and despite "average" sexual behaviors in the US resembling those in many Western countries (Darroch, Singh, and Frost 2001, Westoff 1988), the US has among the highest levels of STIs in the developed world (Eng and Butler 1997, Panchaud et al. 2000). The literature argues that two factors are primarily to blame: cultural factors related to sexuality and reduced access to and quality of health care (Eng and Butler 1997, Darroch et al. 2001, Aral and Holmes 1999).

In addition to being used to account for higher STI rates in the US relative to other developed countries (Eng and Butler 1997, Satcher 2001, Berne and Huberman 1999), the cultural argument has also been used to explain cross-national differences generally (e.g., Darroch et al. 2001) and within Europe (e.g., Ingham 2000). Applied to the US, this explanation holds that heightened secrecy surrounding sex and sexual health leads to inadequate sex education in schools, a dearth of public discussion of sexual health, a lack of community activism for STIs, denial by parents of the sexual activities of adolescents, refusal on the part of politicians to acknowledge the possibility of "healthy" nonmarital sex, unbalanced media representations of sex, and suppressed communication between parents and children, patients and doctors, and sexual partners. As a result, levels of knowledge about STIs, their symptoms, and where to receive services are low, and at-risk individuals (especially adolescents) are reluctant to seek STI screening or to adopt protective behaviors such as negotiating condom use and asking sexual partners about their sexual histories. Furthermore, due to the stigma associated in the US with STIs, individuals who suspect that they are infected are more likely to delay seeking treatment and, consequently, more likely to infect others (Eng and Butler 1997, Berne and Huberman 1999, Satcher 2001). In contrast, countries that are more comfortable with sexuality and with adolescent sexuality, in particular, foster attitudes, behaviors, and policies that are more conducive to reducing the prevalence of STIs.

Reduced access to care is argued to produce higher STI rates in the US as a result of three factors: lack of universal access to STI screening and treatment (due to insufficient political support for screening and treatment programs), lack of universal healthcare (related is that even for those who have health insurance, STI screening and treatment is not always covered), and greater poverty, resulting in a larger percentage of the populace that potentially cannot afford STI screening or

treatment. Differences in quality of care also are argued to contribute to STI differentials across countries and within the US.

Despite the focus in the literature on differences in sexual culture and access to and quality of health care as the dominant explanations for unusually high STI rates in the US, little empirical research has been conducted to test these hypotheses. Consequently, in this study, I use nationally representative data from the early 1990s to analyze differences in STI rates among three developed countries: the United States, Britain, and Finland. I focus on the contribution of the two factors most commonly argued to account for cross-national differences in STI rates: differences in sexual culture, as indicated by behaviors and attitudes related to sex, and access to and quality of health care, as indicated by measures of socioeconomic status (SES). Because traditional demographic characteristics also typically exhibit strong associations with STI risk, however, I additionally assess the contribution of gender, age, marital status, religiosity, and race/ethnicity to differences among countries in STI rates. Since race/ethnicity is a potent predictor of STI risk in the US and Britain, I focus in particular on the role of race/ethnicity in contributing to cross-national differentials.

Since levels of infection can vary across countries because of differences in the distribution of factors (i.e., compositional effects) or differences in the association between factors analyzed and risk (i.e., rate effects), I analyze both. As such, this analysis is designed to answer three questions:

(1) How important, respectively, are measures of sexual culture, access to and quality of health care, and basic demographic factors in explaining differences among countries in STI risk?
(2) How much of the difference among countries in STI risk is due to differences in the distribution of factors associated with risk? How much is due to differences in the association between salient factors and risk?
(3) To what extent do racial/ethnic differences explain higher STI rates in the US?

Data & Methods

I chose Britain and Finland as the comparison countries for this analysis for two reasons. First, like the US, both have nationally representative data sets from the early 1990s that contain data on the factors of interest. Secondly, I wanted countries that span the available spectrum of cultural orientations towards sexuality. Although any ranking of countries according to the liberality or conservativeness of their sexual cultures is necessarily subjective, among European countries, Britain is generally regarded as falling near the conservative end, whereas Finland, along with the other Nordic countries, is generally viewed as falling near the liberal end. This general perception receives support from analyses of differences in sexual behaviors among European countries (e.g., Magnus 1998, Leridon et al. 1998, Sandfort et al. 1998).

Data: The data for the United States come from the National Health and Social Life Survey (NHSLS), a cross-sectional survey conducted in 1992 by the National Opinion Research Center (NORC) at the University of Chicago (Laumann et al. 1994). The data for Britain come from the first National Survey of Sexual Attitudes and Lifestyles (NATSAL), a cross-sectional survey conducted in England, Wales, and Scotland in 1990 and 1991 (Field et al. 1995). The data for Finland come from the National Study of Human Relations, Sexual Attitudes and Lifestyles in Finland (FINSEX), a cross-sectional survey conducted in 1991 and 1992 (Kontula and Haavio-Mannila 1995). Because most cases of STIs are acquired through heterosexual intercourse, I restrict the analytic sample to individuals between the ages of 18 and 59 with analyzable STI data who reported having ever had

vaginal intercourse. With these restrictions, the final analytic samples for the US, Britain, and Finland consist of 3297, 4082, and 1724 respondents, respectively.

The dependent variable in this analysis is reporting having ever had an STI. The primary predictor variables of interest are indicators of sexual culture and access to and quality of health care. I use both behavioral and attitudinal measures of sexual culture. Behavioral measures analyzed include lifetime number of sex partners, having engaged in same-gender sex, age at first vaginal sex, having used contraception at first vaginal sex, having been in love with one's partner at first sex, having engaged in oral sex, having engaged in anal sex, and having exchanged money for sex. The attitudinal variables measure opinions regarding what constitute appropriate or acceptable sexual behaviors generally, as opposed to what respondents find personally appealing or acceptable. They include indicators of attitudes towards homosexuality, spousal infidelity, premarital sex, and teenage sex. Unlike the US, Britain and Finland have national health systems and universal health insurance coverage, rendering STI care freely or cheaply available to all citizens. Consequently, I use as my measures of access to and quality of health care two indicators of SES, occupation and education. Demographic characteristics analyzed consist of gender, age, marital status, religiosity, and for the US and Britain (the two countries with sizeable racial/ethnic minorities), race/ethnicity.

Methods: I begin the analysis by presenting descriptive statistics by country and by whether or not the respondent reports having been diagnosed with an STI infection. Chi-square tests are used to identify significant differences. In the second part of the analysis, I use nested multivariate logistic regression models to analyze relationships in the three countries between factors analyzed and reporting having ever had an STI. I also use Wald tests to determine whether the magnitude of effects varies across countries. As such, this section is designed to answer three questions: (1) Are behaviors and attitudes related to sex and measures of SES associated with STI risk in each country? Are demographic factors associated with risk? (2) Which individual factors or categories of factors have the greatest predictive power, and does the answer vary by country? (3) Do salient factors operate in a similar manner to affect STI risk in all three countries, or does the magnitude of effects differ across countries?

The final section of the analysis consists of a simulation that demonstrates what STI rates would look like if each country had, alternatively, the composition and rate effects of the other countries analyzed. This simulation sheds light on the extent to which differences in STI prevalence among the three study countries are due to differences in the distribution of salient factors versus differences in the relationship between factors and STI risk. However, due to the nonlinear nature of logistic regression, which renders the exercise imprecise, as well as differences in how variables were defined for each country, the results are suggestive only and should be interpreted with caution.

Summary of Findings

This study provides limited support for the cultural explanation for cross-national STI differentials and the unusually high STI levels in the US. Demographic factors also are found to contribute to differences in rates among countries, with race/ethnicity of particular importance due to associations between salient factors and risk being more harmful for blacks than for non-blacks in the US. In contrast, I find little support for the role of reduced access to health care in contributing to high STI rates in the US, although my ability to test this theory is limited by my reliance on self-reported STI data. As such, the exclusion of undiagnosed infections from the data may be obscuring true underlying associations between access and risk.

Reference List

Anderson G and Hussey PS. 2001. "Comparing Health System Performance in OECD Countries," *Health Affairs* 20(3): 219-232.

Aral SO and KK Holmes. 1999. "Social and Behavioral Determinants of the Epidemiology of STDs: Industrialized and Developing Countries." *Sexually Transmitted Diseases*, 3rd ed ed. King K. Holmes. New York ;, London : McGraw-Hill, Health Professions Division.

Berne L, Huberman B, 1999, "European Approaches to Adolescent Sexual Behavior and Responsibility," Washington, DC: Advocates for Youth.

Darroch JE, Frost JJ, Singh S, et al., 2001, "Teenage Sexual and Reproductive Behavior in Developed Countries: Can More Progress Be Made?" Occasional Report No. 3, New York: AGI.

Darroch, J.E., S. Singh, and J.J. Frost. 2001. "Differences in Teenage Pregnancy Rates Among Five Developed Countries: the Roles of Sexual Activity and Contraceptive Use." *Family Planning Perspectives.* 33(6):244-50, 281.

Eng T, Butler W (eds.), 1997, *The Hidden Epidemic: Confronting Sexually Transmitted Diseases*, A Report of the Institute of Medicine, Washington, DC: National Academy Press.

Field, J. et al., 1995, National Survey of Sexual Attitudes and Lifestyles, 1990 [computer file]. Colchester, Essex: UK Data Archive [distributor]. SN: 3434.

Ingham R, 2000, "Interactional Competence as a Cultural Phenomenon: The Case of the UK and the Netherlands," paper presented at the annual meeting of the Population Association of America, Los Angeles.

Kontula O, Haavio-Mannila E, 1995, *Sexual Pleasures: Enhancement of Sex Life in Finland*, 1971-1992, Hants, England: Dartmouth Publishing Company.

Laumann EO, Gagnon JH, Michaels S, Michael RT, Schumm LP, 1994, *The Social Organization of Sexuality: Sexual Practices in the United States*, Chicago: University of Chicago Press.

Leridon H, Van Z. G. H. M. 1998. "The Europeans and Their Sexual Partners." *Sexual Behaviour and HIV/AIDS in Europe: Comparisons of National Surveys*, Nathalie B. a. T. S. e. Michel Hubert. London: UCL Press.

Magnus, P. 1998. "Risk Behaviour and Risk Contexts." *Sexual Behaviour and HIV/AIDS in Europe: Comparisons of National Surveys*, Nathalie B. a. T. S. e. Michel Hubert. London: UCL Press.

Panchaud C, Singh S, Feivelson D, Darroch J, 2000, "Sexually Transmitted Diseases Among Adolescents in Developed Countries," *Family Planning Perspectives* 32(1):24-32 & 45.

Sandfort T, Bos H.H.-M.E. S.J. 1998. “Sexual Practices and Their Social Profiles.” *Sexual Behaviour and HIV/AIDS in Europe: Comparisons of National Surveys*, Nathalie B. a. T. S. e. Michel Hubert. London: UCL Press.

Satcher D. 2001. “The Surgeon General’s Call to Action to Promote Sexual Health and Responsible Sexual Behavior” [Web Page]. Accessed 2 March 2002. Available at http://www.surgeongeneral.gov/library/sexualhealth/call.htm.

Westoff, C. F. 1988. “Unintended Pregnancy in America and Abroad.” *Family Planning Perspectives* 20(6):254&257-61.