Condom and Other Contraception Use in Contemporary Russia: Effects of Individual Characteristics, Locality Type, and Sex Event Context

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Contraceptive behavior in general and condom use in particular are especially important topics for understanding several dramatic demographic and epidemiological trends in Russia: overall fertility decline, a surge in the proportion of extra-marital births, extremely high (but declining) abortion rates, and the rapid spread of HIV infection and other STDs (see, e.g., Atlani et al. 2000; DaVanzo and Grammich 2002; Feshbach 2003; Eberstadt 2004; Gerber and Mendelson 2005; Heleniak 2005). However, we have very little information about patterns of condom or contraceptive use in Russia during the Soviet era (Popov et al. 1993). In the absence of publicly available nationally representative reproductive health surveys, we have no empirical basis for assessing whether and how these patterns have evolved since then, despite a much heralded sexual revolution that began in the 1980s (Kon 1995) and the opening up of Russia to survey research. As testimony to the absence of data, a recent assessment of unmet contraceptive need in the developing world and the former Soviet Union based estimates for Russia on data only from three "major cities" (Ross and Winfrey 2002). Apart from limiting our understanding of important demographic and public health developments, the lack of data has hindered efforts to apply HIV transmission models to Russia, as it is one source of the extreme parameter uncertainty that undermines these efforts (Grassly et al. 2003). It also limits the ability of policymakers and NGOs to effectively target campaigns promoting condom use.

We estimate statistical models showing how individual traits, locality traits, and what we call the "sex event context" – i.e., characteristics of the relationship, setting, and terms of the sex event – are associated with contraceptive behavior in contemporary Russia. We use data from the Russian Longitudinal Monitoring Survey (RLMS), a panel survey on a representative probability sample of Russian households that has been run almost annually by researchers from the Carolina Population Center since 1994. (For complete information on the RLMS, see http://www.cpc.unc.edu/projects/rlms/rlms_home.html.) The 2001 and 2003 renditions of the RLMS administered special batteries on sexual behavior and contraception use to respondents aged 14-49 (Vannappagari 2004). A total of 3994 respondents completed the battery on one of the two occasions and 3964 completed the battery twice, yielding 11922 observation records.

From the 9518 observations reporting intercourse with at least one partner during the past year, the RLMS elicited extensive information about the most recent occasions of intercourse with *each one* of up to three (most recent) partners during that period. Crucial for our purposes, the survey ascertained whether a condom was used: 7878 reported on one act, 1019 on two, and 505 on three, for a total of 11431 reports. Overall, condoms were used in 24.5% of the acts. Whether or not a condom was used, the survey also asked about the use of other contraceptive methods: douching with water or with chemicals, menstrual rhythm, withdrawal, birth control pills, IUD, hormone injections, diaphragm, and ointment/foam/jelly.

The RLMS contains variations necessary to model the associations of condom and other contraceptive use with a wide variety of individual-level demographic, behavioral, and cognitive characteristics that are likely to play a role based on studies of other countries (e.g. Oddens and Lehert 1997; Santelli et al. 1997; Sheeran et al. 1999; Spinelli et al. 2000): age, education, marital status, ethnicity, religion, labor force status, income, age at first intercourse, fertility history, prior abortions, use of drugs, alcohol, and tobacco, number of partners during the last year, and knowledge regarding HIV/AIDS and other STDs. The data also permit us to model differences by type of locality (Moscow/St. Petersburg vs. other city vs. rural area).

Most importantly, the data contain rich information about the sex event context. These include: relationship of the respondent to partner (spouse, friend, acquaintance, paying client, etc.), setting where the partners met, duration of the sexual relationship, perception of whether the partner has other partners and uses drugs, and consumption of alcohol by the respondent during the sex event. While some of these variables have been used before in models of contraceptive use, this set of characteristics is unusually broad and detailed, and the data structure, which includes data on multiple sex acts for a large number of respondents, is especially well suited for assessing their effects.

Our modeling approach involves estimating binary logistic regressions for condom use and for no contraception and multinomial logit models for choice among these two categories, a traditional method (rhythm, withdrawal, douche with water), and another modern method (diaphragm, IUD, birth control pills, hormone injections, foams and other chemicals). We focus on condom use because, in contrast to other methods, condoms are effective deterrents not only to pregnancy but also to the transmission of HIV and other STDs. We distinguish between traditional and other (than condoms) modern methods, because the former are less effective. The unit for all analyses is the sex act; we apply the appropriate procedures to correct standard errors for the clustering of observations (sex acts) within respondents. We run all models on the entire sample and also on males and females separately, since the pattern of effects is likely to differ by gender (Kowaleski-Jones and Mott 1998). We exclude the 918 sex acts for which the respondent indicates the motivation for not using contraception was conception.

For each regression, we first consider the effects individual characteristics. We start by estimating reduced form effects of demographic traits, then we add the individual behavioral and cognitive measures. Next we examine the effects of locality and sex event context separately. We then estimate a full additive model, which we compare to the earlier models to assess whether sex event context mediates the effects of individual and locality variables. We also test a limited set of interactions between individual characteristics (primarily age, education, and marital status) and features of the sex event context.

Finally, in order to more rigorously assess the possible effects of sex event context on contraceptive behavior, we estimate models with person-level fixed effects. This permits us to control for some unobserved factors (namely, those that remain constant across sex

acts) that might jointly influence characteristics of the sex event context and contraceptive behavior, permitting us to make stronger claims about the causal nature of the observed effects. The RLMS data are especially well suited for the latter purpose because they contain data on up to 6 sex events per individual respondent (since roughly half the total number of respondents were interviewed twice and there can be no double-counting of sex events due to the timing of the two waves). Moreover, 3532 respondents report on at least two sex events – either because they were interviewed twice or because they report multiple events during one interview (or both). In short, the data offer an unusually high degree of statistical power for assessing how sex event context affects contraception use.

Our findings provide some initial empirical evidence as to the individual and context factors that increase the absolute odds of condom use, any contraceptive use, and the relative odds of using natural and other methods in contemporary Russia. This information will help us identify which groups of the Russian population are most susceptible to HIV, other STDs, and unplanned pregnancy. Theoretically, our analysis yields new insight into whether and how contraceptive behavior varies systematically by factors characterizing the sex event context, independently of the effects of individual and contextual factors. Our findings can help reduce some sources of uncertainty in the application of HIV transmission models to Russia and also help policymakers and NGOs who wish to promote condom use identify suitable target groups.

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