INTRODUCTION

Southern Africa is in the midst of a huge HIV/AIDS epidemic. This epidemic has reduced life expectancy in the region from 60 to 40 years. Infection levels are high, even among adolescents (UNAIDS, 2000), and premarital sexual activity has increased in recent decades (Meekers, 1994). Health interventions have had some limited impact but have been constrained by the availability of resources (Stover, 2000). Thus, it remains important to identify factors that play an important role in HIV transmission.

In recent years there has an upsurge of religiosity in sub-Saharan Africa (Takyi, 2003). In a survey conducted in 60 countries, 82% of respondents in West Africa reported that they attended religious services regularly compared with 32% of respondents worldwide (Gallup, 2000). Although the Gallup survey was not conducted in sub-Saharan Africa, observers have also noted high levels of church attendance in Southern Africa. Given the enormous AIDS crisis facing Southern Africa, an important question is whether religion can influence behaviors that facilitate HIV transmission. Moreover, given the high rates of HIV infection during adolescence, it is of particular interest to know what effects religion has on the onset of sexual behavior and the adoption of condom use among adolescents.

Contrary to increasing secularization of sexual and contraceptive practices in the United States (Westoff, 1977, 1979), there has been an increase in differentiation between religious groups in sub-Saharan Africa. Many African societies have undergone a religious revival where dynamic religious groups have distinguished themselves from mainline Protestant or Catholic groups (Takyi, 2003). Numerous religious organizations have become involved in AIDS prevention activities (Green, 2003). Their main message has been the promotion of abstinence as an exclusive strategy for young people (Marindo et al., 2003). Observers have claimed that religious groups have had success in reducing the impact of the HIV epidemic in sub-Saharan Africa by promoting changes in sexual behavior (Green, 2003; USAID, 2003) and U.S. government initiatives to fund interventions through faith-based initiatives are underway (Miller and Gur, 2002). However, carefully designed research studies that support or reject these claims have not been conducted.

To our knowledge, no previous study has been specifically designed to assess the effect of religion on premarital sex and condom use in Africa. In this study, we ask the following question: what is the relative importance of religion in differentiating premarital sexual behavior and the adoption of condom use in the context of a full-blown HIV/AIDS epidemic?

Conceptual approach

Most of the existing knowledge on this subject comes from the studies conducted in the United States or Europe. Many U.S. studies on adolescent sexual behavior and

contraceptive use have used religion as a control variable, among many other variables. Very few have been specifically designed to address the effects of religion on these behaviors. Moreover, studies have tended to either focus on the determinants of first intercourse or on the determinants of contraceptive use. These studies have assumed that the choice of initiating sex and the choice of using a contraceptive at first sex are independent. They have failed to take into account that these choices are related to each other. In other words, adolescents may choose to delay sexual initiation in order to avoid HIV risk or they may possibly initiate sex but use condoms to reduce their HIV risk. At a time of heightened awareness of the AIDS epidemic in sub-Saharan Africa, the decision to use a condom is likely to be an integral part of the decision to become sexually active. Religious groups in Africa often promote abstinence as the only response to avoiding HIV and are strongly opposed to condom use. In order to correctly estimate the effect of religion on sexual initiation and condom use, the lack of independence of these choices must be taken into account.

Measures of religion

Two measures have been used in most U.S. studies to represent the potential effects of religion on premarital sex. The first of these, religious affiliation, signifies the degree to which doctrines of a religion influence individual behavior (Thornton and Camburn, 1989). This variable comes from the particularized theology hypothesis, which relates the presence or absence of specific tenets about family size or contraception to individual attitudes and behavior. For example, although most churches may oppose premarital sex, some churches may have particularly strong positions while others may have modified their position against it. This hypothesis can also incorporate the influence of doctrines that relate to reproduction or sexual behavior more indirectly, such as beliefs concerning as the role of women in society (Goldscheider, 1971).

The second variable, religiosity, measures the level of participation in religious activity. This variable could have effects through several mechanisms: a) individuals who are more involved are likely to receive religious messages more often than others and b) individuals with higher involvement levels are also more likely to be influenced by peers who share values promoted by the church (Thornton and Camburn, 1989). This variable is consistent with hypotheses that have emphasize social interaction and the diffusion of ideas as important in motivating changes in reproductive health behaviors (Bongaarts and Watkins, 1996).

Data

This study is based on data from five waves of the Zambia Multiround Adolescence Survey (ZMAS)**.** The survey was implemented by the Society for Family Health, an affiliate of Population Services International, with funding from the United States Agency for International Development (USAID). Thus far, five waves of the survey have been conducted, which a sample size of 2,400 respondents each. This provides a total of 12,000 respondents for our analysis. The first wave of the survey was conducted

in December 2001. Subsequent waves were conducted in April, 2002, August, 2002, December, 2002, and April, 2003.

Each survey wave contains information on a representative sample of males and females aged 13-24 in Lusaka province (Kusanthan 2003; Muhwava, Kusanthan, and Sachingongu 2002). The sample was selected using a three-stage stratified cluster sample, drawn by the Zambia Central Statistical Office. First, 96 census Standard Enumeration Areas (SEAs) were randomly selected with probability of selection proportional to population size. This resulted in 9 rural SEAs and 87 urban SEAs. Within each selected SEA, households were selected with probability of selection proportional to the number of households in the SEA. Within the selected SEAs, 25 households were selected systematically, using a fixed sampling interval. For each selected household, a listing of eligible household members was prepared, from which one was randomly selected for interviewing. All interviews were conducted by same-sex interviewers, who verbally obtained informed consent. A recent analysis of this data shows that the data is of good quality (Meekers and Agha, 2003).

Analysis

We incorporate a number of control variables in our analyses, which are selected on the basis of prior research on adolescent sexual behavior. Our models examine the determinants of premarital sex and condom use at first sex. We estimate models based on the joint estimation of the likelihood of being sexually active and the use of a condom at first sex. The models control for the potential effects of selectivity.