J. Biosoc. Sci., (2011) **43**, 305–327, © Cambridge University Press, 2011
doi:10.1017/S0021932010000775 First published online 8 Feb 2011

IS TRADITIONAL CONTRACEPTIVE USE IN MOLDOVA ASSOCIATED WITH POVERTY AND ISOLATION?

MARK J. LYONS-AMOS*†, GABRIELE B. DURRANT* AND SABU S. PADMADAS*†

*Southampton Statistical Sciences Research Institute, University of Southampton, UK and †Centre for Global Health, Population, Poverty & Policy, University of Southampton, UK

Summary. This study investigates the correlates of traditional contraceptive use in Moldova, a poor country in Europe with one of the highest proportions of traditional contraceptive method users. The high reliance on traditional methods, particularly in the context of sub-replacement level fertility rate, has not been systematically evaluated in demographic research. Using cross-sectional data on a sub-sample of 6039 sexually experienced women from the 2005 Moldovan Demographic and Health Survey, this study hypothesizes that (a) economic and spatial disadvantages increase the likelihood of traditional method use, and (b) high exposure to family planning/reproductive health (FP/RH) programmes increases the propensity to modern method use. Multilevel multinomial models are used to examine the correlates of traditional method use controlling for exposure to sexual activity, socioeconomic and demographic characteristics and data structure. The results show that economic disadvantage increases the probability of traditional method use, but the overall effect is small. Although higher family planning media exposure decreases the reliance on traditional methods among younger women, it has only a marginal effect in increasing modern method use among older women. Family planning programmes designed to encourage women to switch from traditional to modern methods have some success – although the effect is considerably reduced in regions outside of the capital Chisinau. The study concludes that FP/RH efforts directed towards the poorest may have limited impact, but interventions targeted at older women could reduce the burden of unwanted pregnancies and abortions. Addressing differentials in accessing modern methods could improve uptake in rural areas.

Introduction

The Republic of Moldova has a high proportion of traditional contraceptive users compared with Western European and other post-socialist and South-East European

countries (NCPM & ORC Macro, 2006; United Nations, 2007). The high level of traditional method use is associated with a high proportion of unwanted pregnancies and widespread poor maternal health resulting from continued high demand for induced abortion – a key mechanism for birth control and the observed low fertility rate in Moldova (NCPM & ORC Macro, 2006). This study examines the contraceptive choice patterns among sexually active women in Moldova, particularly focusing on traditional methods. An understanding of the factors determining traditional method choices is critical for evaluating and improving policy intervention strategies aimed at reducing traditional method use, unwanted pregnancies and induced abortion.

The determinants of high traditional method use are poorly understood in the demographic literature, in particular in the Eastern European setting (Rogow & Horowitz, 1995; Santow, 1993, 1995). The recommendations made at the 1994 International Conference on Population and Development highlight the importance of traditional methods in the informed choices framework (United Nations, 1995), suggesting that appropriate use of traditional methods can be effective in preventing unwanted pregnancies (although not necessarily sexually transmitted infections). Despite this recommendation, there is still limited research on traditional method use (Rogow & Horowitz, 1995). The majority of studies either ignore traditional methods and define contraceptive use exclusively in terms of modern method use (Pariani *et al.*, 1991; Swar-Eldahab, 1993; Westoff, 2005), or focus on the determinants of modern method use with traditional methods as a residual category (Magadi & Curtis, 2003). This study explicitly focuses on traditional methods in an effort to expand the limited understanding of traditional contraception in modern societies.

Traditional methods consist of withdrawal, abstinence (temporary or periodic), lactational amenorrhoeic method (LAM) and other folkloric methods. The efficacy of traditional methods varies. Evidence suggests successful practise in nineteenth and twentieth century Europe (Nye & Poppel, 2003; Fisher & Szreter, 2003), although Kowal (2004) estimates that 27% of withdrawal and 25% of periodic abstinence users experience a conception within one year of use. These rates of user-failure are high when compared with modern methods such as the IUD (0.8%) and the pill (8%). In contrast, LAM is regarded as a highly effective method; 6-month failure rates are estimated to be around 1.5% (Kennedy & Trussel, 2004), although there is no protective effect following resumption of menses.

Family planning programmes have been introduced in Moldova since 1999, actively promoting the use of modern methods to reduce unwanted pregnancies and induced abortions. However, their effectiveness can only be evaluated in the wider context of economic, socio-demographic and geographical conditions of the country. Similar to many other post-socialist countries, Moldova has experienced economic collapse since 1991 resulting in a decline in GDP of 66% by 2001, with a dramatic reduction in employment rates, particularly in the agricultural sector (30% fall between 1996 and 2000) and a high proportion of people living in poverty (70% in 2000) (World Bank, 2005). Large parts of the country, in particular regions outside the capital Chisinau, are still predominantly rurally orientated, often suffering from a lack of appropriate infrastructure, restricted access to public facilities and medical provision resulting from a centralized health care system during the socialist era (MacLehose & McKee, 2002).

This study investigates the correlates of traditional method use based on data from the 2005 Moldovan Demographic and Health Survey (MDHS), contributing to a better understanding of the associated factors. In particular, the paper examines the joint impact of three key factors: poverty, geographic isolation and family planning/reproductive health (FP/RH) programmes, on traditional method choice, controlling for relevant socioeconomic, spatial and demographic influences.

The paper is structured as follows. First, the reproductive health context in Moldova is discussed. Then, a conceptual framework motivating and deriving the key research hypotheses is provided. The data and method used in the analysis are presented, including an explanation on the operationalization of key variables in the model. The results are interpreted in the light of the research hypotheses. Concluding remarks and policy recommendations are made in the final section.

Reproductive health context

The Republic of Moldova came into existence in 1991, replacing the Moldovan Soviet Socialist Republic. Since independence, the country has faced myriad reproductive health challenges, exacerbated by deteriorating economic conditions. Moldovan fertility has fallen since independence and it has now reached a sub-replacement level of 1.7 children per woman (Council of Europe, 2004; NCPM & ORC Macro, 2006). About 24% of married women use a traditional method in Moldova; of these 82% rely on withdrawal (NCPM & ORC Macro, 2006). This is considerably higher than in Western Europe (e.g. Germany 4.5%, The Netherlands 2.9%) and other post-socialist countries (e.g. Latvia 8.7%, Hungary 9%, Bulgaria 15.7%). However, the level of traditional method use in Moldova is comparable to other South-East European countries: for example 34.3% in Romania and 29.5% in Ukraine (Johnson *et al*., 2004; World Health Organization, 2004). Modern method prevalence constitutes 44% in Moldova, which is lower than in Western European countries: for example 65.6% in Germany and 75.6% in The Netherlands (United Nations, 2007). The most popular modern method is the IUD (25.2% among married women) whereas hormonal contraceptive use is rare (NCPM & ORC Macro, 2006). This is typical of the socialist fertility control regime, which stressed the advantages of long-term methods and exaggerated the negative health implications of hormonal contraception (Popov *et al*., 1993).

Unwanted pregnancy rates are very high in Moldova, primarily due to high failure rates resulting from a reliance on traditional contraceptive methods (NCPM & ORC Macro, 2006). About 43% of unwanted conceptions in Moldova result from traditional method failure, compared with 20% from modern methods (Westoff, 2005). Those experiencing traditional method failure often resort to induced abortion procedures (Westoff, 2000, 2005; Agadjanian, 2002). The 2005 MDHS data show that among sexually experienced women (those who have ever had sex), 46.2% reported having had an induced abortion, and of these 40.9% had at least one subsequent termination. The majority of these abortions are carried out using the dilation and curettage procedure, increasing the risk for complications and health problems (Comendant, 2005). There is only limited availability of vacuum aspirations and medical (drug-induced) abortions in Moldova (Comendant, 2005). The repeated use

of abortion is a major public health concern in the country: NCPM & ORC Macro (2006) estimate that in 2002 abortion was the second most prevalent cause of death, while Comendant (2005) estimates that the proportion of deaths resulting from abortion during the period 1992–2002 was 30.3%.

In an attempt to improve the reproductive health situation, the Moldovan government introduced the National Programme in Family Planning and Protection for Reproductive Health (NPRH) in 1999, reviewed later in 2005 (NCPM & ORC Macro, 2006). This programme aimed to reduce the burden of unwanted pregnancies and induced abortions by promoting modern method awareness through mass media and by increasing access to family planning clinics. Under this initiative, FP/RH services were expanded through a network of 40 family planning centres spread across the country (MacLehose & McKee, 2002). Municipalities are responsible for the delivery of FP/RH services in each region (North, South and Central, which includes Chisinau). Contraceptives previously distributed through maternity clinics (secondary care) have now been shifted towards primary care level to improve access (MacLehose & McKee, 2002). These programmes rely heavily on support from overseas donor agencies and NGOs (MacLehose & McKee, 2002; Comendant, 2005).

Alongside the NPRH, the Moldovan government launched the National Programme for Combating HIV/AIDS (NPAIDS) in 2001 to control the rapid spread of HIV/AIDS (NCPM & ORC Macro, 2006). The interventions focused on prevention measures such as promoting awareness of HIV transmission to both general and high-risk groups. The 2005 MDHS shows evidence of high levels of AIDS awareness (97%) but knowledge of HIV prevention methods was found to be relatively poor (NCPM & ORC Macro, 2006). The Moldovan government identified that the spread of HIV/AIDS was a major challenge in the coming century, due to HIV awareness lacking 'mass character' (NCPM & ORC Macro, 2006).

However, the effectiveness of FP/RH health programmes can only be seen in the wider economic context of the country. In general, FP/RH programmes in post-socialist Eastern Europe have had poor results, mainly due to rapid social change and economic instability. For example, family planning programmes in Bulgaria had no impact on improving access to clinics during the post-Socialist economic crisis (Carlson & Lamb, 2001), and had only a limited impact on increasing family planning knowledge. In Romania, modern method uptake, since the fall of socialism, has been limited because of high method costs (Serbanescu *et al*., 1995; Johnson *et al*., 2004). Since 1991, Moldova has experienced economic collapse with GDP falling by 66% by the end of 2005 (NCPM & ORC Macro, 2006), employment falling by approximately 19% from 1996 to 2000 (with agricultural employment, the primary employer in Moldova, falling by 30%) and 70% of people living below the poverty line in 2000 (World Bank, 2005). This difficult economic situation has had wide-ranging implications for the majority of the Moldovan population, such as a significant reduction in purchasing power and limited monetary means. This, in particular, may have limited the impact of FP/RH programmes since modern contraception was not subsidised, i.e. not provided free of charge (MacLehose & McKee, 2002). Between 1997 and 2005, the overall contraceptive prevalence decreased from 73% to 68.7% while modern method use decreased from 48% to 45% (1997 Moldovan Reproductive Health Survey and 2005 MDHS).

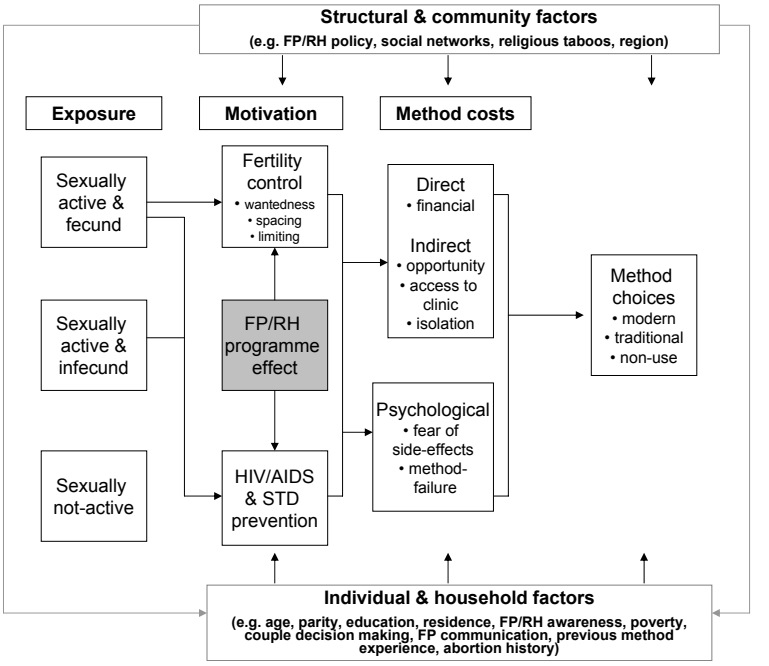

Fig. 1. Conceptual framework illustrating the motivation and barriers associated with contraceptive method choices.

Conceptual framework and research hypotheses

A conceptual framework is developed that outlines the motivation and barriers associated with contraceptive method choices (Fig. 1). From this, the key research hypotheses on the effects of poverty, geographic isolation and FP/RH programmes on the choice of traditional methods are derived.

The framework, adapted from Easterlin (1979), explains the cost barriers in accessing contraceptive methods and the individual motivation underlying reproductive health needs, such as motivation for fertility control and prevention of HIV/AIDS and other sexually transmitted diseases. Family planning/reproductive health programmes aim to meet individual contraceptive and reproductive health needs, provide quality services and motivate couples to make appropriate method choices for limiting fertility, preventing diseases or both.

Couples may be discouraged from using modern contraception by prohibitive costs. These costs are not recorded in the DHS so their effect is measured through proxy variables. Modern methods have a direct (financial) cost, whereas traditional methods have no such costs, as no supplies need to be purchased and no clinical consultation is required. Women of lower economic status may be unable to afford modern contraception and may instead use traditional methods (Serbanescu *et al.*, 1995; Johnson *et al.*, 2004). The indirect cost is the opportunity cost of obtaining a method (Easterlin, 1979). It is hypothesized that women who cannot access a family

https://doi.org/10.1017/S0021932010000775 Published online by Cambridge University Press

planning clinic or who live in an under-served area (e.g. rural areas) are less likely to use a modern method and instead rely on a traditional method.

Three aspects of FP/RH programmes on method choices are examined. The NPRH explicitly promotes modern contraceptives through media campaigns, particularly encouraging traditional method users to switch to modern methods (NCPM & ORC Macro, 2006). It is therefore expected that higher family planning media exposure will be associated with higher modern and lower traditional method use.

The NPRH is also evaluated by assessing the programme effect in determining whether women accept modern methods by discontinuing their previous (traditional) method. However, it is not unlikely that women who have previously discontinued a traditional method may still continue using the same method after a birth or an induced abortion in the case of method failure (Kost, 1993; Goldburg & Toros, 1994). This analysis further evaluates the potential impact of NPAIDS on contraceptive behaviour. Only condoms offer protection against HIV/AIDS; traditional methods do not (Kowal, 2004). It is hypothesized that higher exposure to NPAIDS through media would encourage women to use modern methods, specifically condoms.

The conceptual framework incorporates the exposure to risk of conception identified by Easterlin (1979), which is expanded to incorporate HIV/STD prevention as a motivation to use contraception. The influences identified are (i) exposure to sexual activity, (ii) exposure to risk of conception (fecundity) and (iii) the motivation to prevent pregnancy or HIV/AIDS and other STDs. These concepts are operationalized in the Methods section. In a multilevel framework, method choices and decisions are determined by individual, household and structural/community characteristics mediated by other main effects such as motivation and cost factors. Contraceptive network effects are also important, and can influence individual-level decisions even after controlling for individual-level characteristics (Montgomery & Casterline, 1996; Kohler *et al.*, 2001). The inclusion of contextual information can therefore provide an understanding of the effect of contraceptive networks on individual method choices.

Traditional method use is associated with a range of demographic and socioeconomic correlates. Traditional method use is popular among older women (Robinson, 1996; Magadi & Curtis, 2003; Westoff, 2000, 2005) but is less common among higher parity women (Magadi & Curtis, 2003). Education seems highly influential, although the effect is inconsistent. Robinson (1996) finds that higher education can encourage women to switch from traditional to modern methods, although in some contexts educated women are more likely to use a traditional method (Robinson, 1996). Cultural and religious influences are also important. In general, there are fewer taboos toward traditional methods than modern methods. Roman Catholicism prohibits withdrawal, although the use of periodic abstinence is allowed since it promotes celibacy (Santow, 1993, 1995). In contrast, the Orthodox Church does not interfere in contraceptive choices (Christopher, 2006).

Data

Data for this study are drawn from the 2005 Moldova Demographic and Health Survey (MDHS). The survey collects detailed information on FP/RH including birth

and abortion histories, maternal and child health, HIV/AIDS knowledge and attitudes as well as other background demographic and socioeconomic characteristics. The survey was conducted in all regions excluding Transnistria, which contains approximately 15% of the Moldovan population (NCPM & ORC Macro, 2006).

The MDHS has a probability two-stage cluster design. A total of 400 primary sampling units (PSUs) were selected from the 2004 Moldovan Census using systematic sampling with probability proportional to size, with an oversample of urban PSUs: 30 households were then selected from each PSU where all women aged 15–49 were interviewed. The survey includes sampling weights to account for the complex sampling design and unequal selection probabilities. Responses between women may be correlated due to area-level effects, such as those of contraceptive networks (Montgomery & Casterline, 1996; Kohler *et al.*, 2001), other community-level (PSU) characteristics and interviewer effects, leading to clustering of women within communities. The overall response rate was 95% (comparable to response rates in other DHS in post-socialist republics, e.g. Ukraine 90.2%, Armenia 88.8%), with a total of 7440 women interviewed. Women who reported never having had sex (n=1401) were excluded, since they are conceptually not relevant to the study. Infecund or pregnant women are retained since they may use barrier contraceptives to protect against HIV/AIDS. The final analysis sample consists of 6039 women aged 15–49 years.

There are some data limitations. The MDHS records only one current method use per woman. Where more than one contraceptive is used, only the most effective method is recorded, leading to potential under-reporting of traditional methods (Rogow & Horowitz, 1995). Existing literature indicates that religion is important in determining the choice of contraceptive method. However, the MDHS collects data on religious affiliation rather than religiosity, which limits the understanding of the influence of religion on contraceptive use. Another potential factor associated with method choice is sexual abstinence due to high male migration from Moldova to Russia and Western Europe, particularly since the 1998 Russian financial crisis, and which accounts for nearly 25% of the Moldovan working population (World Bank, 2005). This short-term displacement demonstrates the importance of controlling for reported sexual activity, as well as the other commonly used indicators of sexual activity (e.g. marital status).

Methods

The dependent variable for this analysis is current contraceptive method use. The MDHS asked women, 'Are you currently doing something or using a method to avoid getting pregnant?' (NCPM & ORC Macro, 2006). Respondents who answered affirmative were asked to mention the specific method they were using at the time of survey. The responses were re-coded into three categories: women currently using a modern method, a traditional method or no method.

The effects of selected explanatory variables on method choice are modelled using multinomial logistic regression, controlling for the hierarchical data structure and accounting for unexplained variance resulting from the sampling design. A multilevel model allows for correlation in probabilities of method choice for women living in the

same area (clustering), resulting from community-level effects (Magadi & Curtis, 2003; Lindstrom & Munoz-Franco, 2005). Failure to account for such clustering leads to underestimated standard errors and incorrect inferences. Other advantages of the multilevel model include allowing the effect of covariates to vary across communities (random slopes), incorporating covariance between the unobserved area influences on the different types of method choices and information defined at the cluster level (contextual variables).

The dependent variable y_{ij} is current method choice for woman i living in area j, which is coded 0 for modern method users (40.3%), 1 for traditional method users (21.1%) and 2 for non-users (38.6%). The probability of method choice is expressed as:

$$\pi_{ij}^{(s)} = \Pr(y_{ij} = s),$$

where s=0, 1, 2. The model is presented as:

$$\ln\left(\frac{\pi_{ij}^{(s)}}{\pi_{ij}^{(0)}}\right) = \boldsymbol{\beta}^{(s)T}\boldsymbol{x_{ij}} + v_j^{(s)},\ s = 1, 2, \tag{1}$$

where $\boldsymbol{\beta}^{(s)}$ is a vector of coefficients, $\boldsymbol{x_{ij}}$ is a vector of explanatory variables including interaction effects and $\nu_j^{(s)}$ represents unobserved random PSU effects. The PSU random effects $\boldsymbol{v_j}$ are assumed to follow a bivariate normal distribution, such that:

$$\boldsymbol{v_j} = \left(v_j^{(1)}, v_j^{(2)}\right) \sim \mathrm{N}(0, \Omega),$$

with Ω defined as:

$$\Omega = \begin{bmatrix} \sigma^{2(1)} & \\ \sigma^{(12)} & \sigma^{2(2)} \end{bmatrix} \tag{2}$$

where $\sigma^{2(1)}$ and $\sigma^{2(2)}$ denote PSU-level variances for traditional and non-use respectively, and $\sigma^{(12)}$ denotes the covariance between PSU effects on traditional and non-use use. A positive (negative) residual covariance is expected if areas that have high rates of traditional method use tend also to have high (low) rates of non-use. Equation (1) is referred to as a random intercept model because the effect of area j is to change the log-odds of traditional or non-use versus modern method by $\nu_j^{(s)}$, regardless of the values $x_{ij}^{(s)}$. In the more general random slopes model, $\boldsymbol{\beta}^{(s)}$ may vary randomly across PSUs. The model does not incorporate clustering at the household level. Although the sampling design of the MDHS interviews all women living in a randomly selected household, there are only 1443 households out of a total of 11,095 households (13%) in the analysis sample with more than one woman eligible for interview. The scarcity of the data therefore does not lend itself to a random effect at the household level. (The random effect at the household level was nevertheless tested but was not found to be significant.)

The operationalization of the key variables explored in the model was as follows. Since the MDHS does not collect information on household income directly and the

https://doi.org/10.1017/S0021932010000775 Published online by Cambridge University Press

cost of contraceptive method is only recorded for current modern method users, this analysis considers a proxy variable of asset wealth to measure the effect of direct costs. This proxy variable was derived as an index score using principal component analysis (PCA) (Filmer & Pritchett, 2001) based on variables related to ownership of assets, where higher scores indicate more affluent households. The variables 'access to water' and 'toilet' were excluded from the PCA since the variance of these variables was small.

The effects of indirect costs are measured with the help of proxy variables, first directly in terms of access at the individual level (i.e. whether respondents have accessed a family planning clinic in the past year) and at the PSU level (defined as the proportion of women in each cluster who accessed a clinic in the past year). Secondly, two indirect measures of access are employed: region of residence and the urban/rural residence indicator. Region is also included to account for the potentially differing level of quality in FP/RH services organized at a regional level.

The variables that capture aspects of the national programmes are exposure to family planning media, discontinuation of last contraceptive method within the last five years preceding the survey (to evaluate the effect of NPRH), individual knowledge of the ways to prevent HIV transmission (to evaluate NPAIDS) and induced abortion history. A score for family planning media exposure is derived using principle component analysis (PCA) in a similar way to Filmer & Pritchett (2001), based on whether the respondent had heard about family planning through media (television, radio, newspaper) within the past month, categorized into tertials. Each respondent reports on whether they had heard of family planning through each medium. A higher index score indicates a higher exposure to family planning media at the individual level.

The exposure and control variables include fertility preferences, coital exposure measured in terms of marital status at time of survey, fecundity status and reported sexual activity within the past 4 weeks. These measures are used to account for lack of information in the MDHS data on exposure to coitus resulting from economic migration of spouses (World Bank, 2005). Demographic and socioeconomic variables include respondent's age, parity, recent birth experience, education and ethnicity.

Different specifications of the multilevel models were considered. First, a random intercept was specified (null model) without any covariates. Fixed and random effects (on asset wealth and family planning programme variables) and selected interactions between socio-demographic variables and asset wealth and FP/RH variables were explored to allow for variation in the effects among different social groups. Two area-level variables were tested for significance to explain area-level variances. These variables were derived as aggregate measures of individual-level characteristics at the community level (Magadi & Curtis, 2003; Lindstrom & Munoz-Franco, 2005), specified as contextual variables varying at the PSU level. To measure access, the proportion of women visiting a clinic in the past year was derived (see discussion above); to capture possible network effects on individual method choices, a measure of media exposure to family planning within each community was derived, defined as the mean of the individual-level family planning media exposure scores for each PSU. Cross-level interactions were tested to identify potential interaction effects between individual- and network-level effects (see also Conceptual framework). All variables considered were screened for multicollinearity.

Results

Sample characteristics

Modern method use represents the largest response category: 40.3% of respondents in the analysis sample used a modern method at interview. The percentage of respondents using a traditional method (21.2%) is substantial. The distribution of the type of current method used by explanatory variables is shown in Table 1. All variables were tested for statistical independence using bivariate chi-squared tests. Women in the lowest wealth category have the highest use of traditional methods, and the highest non-use. The proportion of women using a modern method increases with increasing economic status, while the proportion of non-users falls considerably. The proportion of traditional method users in rural areas is 8.4% points higher than in urban areas. Traditional method use is lowest in Chisinau, which includes both urban and rural residents (approximately 7% of Chisinau residents live in rural areas).

All variables related to FP/RH programmes show a statistically significant association with method choice. Women with low media exposure have relatively high traditional method use, although there is no monotonic decrease with higher exposure. As expected, there is a fall in non-use and increase in modern method use with higher family planning exposure. About 18% of respondents are unaware of the existence of AIDS or do not know how to prevent it. These women are most likely to be non-users. Conversely, modern method use is highest among women who know how to prevent AIDS transmission. There is a substantial concentration of traditional method use in women who had previously discontinued a traditional method, as expected (Kost, 1993; Goldburg & Toros, 1994). The use of induced abortion has surprisingly little influence on traditional method use. Women who have had abortions in the past are considerably more likely to use a modern method.

Regression analysis

The PSU-level random effects for both traditional and non-use were significant at the 5% level in the null model (results not shown). A significant covariance indicated that areas with a high (low) proportion of women using no method have a low (high) proportion of women using a traditional method. In the final model, the random intercepts for traditional method use remain significant, but the area-level variance for non-use and the covariance are no longer significant (Table 2). No significant random slopes were found, which indicates that the coefficients do not vary between PSUs. Area-level variables (e.g. PSU mean of family planning media score) and cross-level interactions were also non-significant in the final model.

Table 3 presents the estimated coefficients and standard errors of the explanatory variables included in the final multilevel model. Since the interpretation of odds ratios can be ambiguous for multinomial models, predicted probabilities are presented for important main effects (Table 4). To generate predicted probabilities, all categorical variables are set to their baseline category, except the variable 'fertility preference', which is set to the category 'wants children within the next 2 years' in order to provide a better interpretation of non-use. Traditional use is significantly higher for women from poorer backgrounds than for women in the highest wealth category.

Table 1. Percentage distribution of respondents by current contraceptive method use and selected characteristics, MDHS 2005

Variables	Percentage of current users			No. respondents
	Modern methods (*N*=2431)	Traditional methods (*N*=1275)	No method (*N*=2333)	
All	40.3	21.1	38.6	6039
Asset wealth (direct cost)**				
Low	35.1	22.7	42.2	2357
Medium	40.5	19.5	40.0	2175
High	48.0	21.0	31.0	1507
Access (opportunity cost)				
Region**				
North	39.0	24.0	37.1	1691
Centre	36.9	24.0	39.1	1411
South	39.1	22.2	38.7	1167
Chisinau	44.9	15.4	39.7	1770
Place of residence**				
Urban	42.7	17.6	39.7	3543
Rural	36.8	26.0	37.2	2497
Family planning programme				
Exposure to family planning media**				
Low	34.9	22.1	42.9	2511
Medium	43.0	19.5	37.5	1556
High	44.9	21.1	34.0	1972
Respondent knows ways to avoid AIDS**				
No	38.0	20.6	41.4	961
Yes	42.8	20.4	36.8	2200
Not heard of AIDS	26.4	21.6[a]	52.0	125
Unsure	39.6	21.9	38.5	2753
Use of induced abortion**				
None	36.3	20.5	43.1	3249
1	46.5	22.3	31.1	1143
2 or more	43.6	21.4	35.0	1647
Last method discontinued**				
Modern	41.7	17.1	41.2	1385
Traditional	44.1	26.1	29.8	1188
No recorded discontinuation	38.3	21.0	40.7	3466
Socio-demographic (control)				
Age (in years)**				
15–24	36.0	20.6	43.4	1209
25–34	47.2	20.7	31.9	1835
35–49	37.6	21.6	40.8	2995
Number of living children**				
Nulliparous	27.3	12.7	59.9	1091
1	41.7	19.0	39.3	1656
2	46.0	23.3	30.7	2202
3+	39.4	28.2	32.4	1090

https://doi.org/10.1017/S0021932010000775 Published online by Cambridge University Press

Table 1. *Continued*

Variables	Percentage of current users			No. respondents
	Modern methods (*N*=2431)	Traditional methods (*N*=1275)	No method (*N*=2333)	
Birth in year preceding survey**				
No	41.0	19.9	39.1	5687
Yes	28.4	40.9	30.7	352
Highest educational level**				
Secondary or lower	38.7	21.7	39.6	4603
Higher	45.3	19.3	35.4	1436
Ethnicity				
Moldovan	39.8	21.4	38.8	4445
Romanian	46.9	15.2[a]	37.9	145
Ukrainian	42.0	19.9	38.1	507
Russian	42.4	18.1	39.4	469
Gagauzan	39.9	21.7	38.3	253
Bulgarian	37.4	30.9	31.7	139
Other	35.8[a]	19.8[a]	44.4	81
Fertility preferences (control)**				
Wants a child within 2 years	29.6	14.3	56.1	665
Wants a child after 2 years	46.3	21.5	32.1	859
Wants, unsure of timing	35.1	17.9	47.0	513
Undecided	44.0	22.3	33.7	175
Wants no more children	39.9	26.0	34.0	3250
Can have no more	48.7	3.1[a]	48.2	557
Exposure to coitus (control)				
Current marital status**				
Never married	32.7	13.7	53.6	483
Currently married	43.5	24.2	32.3	4892
Formally married	21.7	3.6[a]	74.7	664
Recent sexual activity**				
Active in last 4 weeks	46.6	25.6	27.8	4314
Not active/ cannot recall	24.3	9.9	65.8	1725
Fecundity**				
Fecund	48.9	25.1	26.0	4673
Amenorrhoeic, pregnant	14.9	19.1	66.0	388
Infecund, menopausal	9.0	2.7[a]	88.0	978

[a]Denotes a small cell count (n<30).
The row percentages may not sum to 100% due to rounding errors.
**p<0.01; *p<0.05 in the χ^2 tests.

This finding is consistent with the situation in other former socialist contexts (Serbanescu *et al*., 1995; Carlson & Lamb, 2001; Johnson *et al*., 2004) and supports the research hypothesis that direct costs can constrain the choice of contraceptive method. However, the predicted probabilities show that the size of this effect is small, with only a 5% point difference between low and high wealth groups.

Table 2. Estimated between-area variance–covariance matrix of the final multilevel model for traditional method use and non-use

Parameter	Estimate	Standard error
Traditional method, $\nu_j^{(1)}$	0.084*	0.037
Non-use, $\nu_j^{(2)}$	0.014	0.035
Covariance, cov(ν_j^1, ν_j^2)	−0.039	0.028

Model estimated using 80,000 MCMC samples with 5000 burn-in. Starting values for MCMC from 2nd order PQL (RIGLS).
*$p<0.05$.

The study found that the indirect measures of access are significant. Women in rural areas are significantly more likely to use a traditional method than urban women ($p<0.05$, Tables 3 and 4). Probability of modern method use is lower in rural areas. In a model without interaction effects (results not shown), traditional method use was significantly higher in the northern and central regions compared with Chisinau. The higher probability of traditional method use in rural areas and regions outside Chisinau suggests higher opportunity costs in poorly serviced regions, and lack of access to modern methods may dissuade women from use, increasing the probability of traditional contraceptive use.

There is a significant interaction between age and family planning media exposure. Overall, older women are more likely to use traditional methods than younger women, for all levels of exposure (Fig. 2). Although higher family planning media exposure is associated with greater modern method use, this effect attenuates with increasing age. For the 15–24 year age group, the difference between the highest and lowest media exposure is 14% points, but for the 35–49 year group this difference is only 5% points. The reverse effect is seen for non-use, with a large fall in the probability of non-use associated with higher family planning media exposure in the youngest age group, but less for older ages.

There is a greater probability of traditional method use among women who do not know how to avoid AIDS and who have never heard of AIDS, but these effects are not significant (Table 3). However, AIDS awareness does have a significant effect on non-use. Women who have not heard of AIDS are significantly more likely to be non-users. Women who are aware of how to prevent AIDS have the highest probability of modern method use (Table 4). These results are consistent with the hypothesized association between AIDS awareness and greater modern method use and highlight that low awareness is associated with a greater risk of AIDS transmission due to non-use. Since not all modern methods offer protection against HIV/AIDS, further analysis was conducted with condom as a separate response category (results not shown). As expected, greater AIDS awareness was found to be significantly associated with a higher probability of condom use. It should be stressed that the probability of condom use was found to be very low: 6% for women aware of AIDS and less than 1% for women who have not heard of it.

Table 3. Estimated coefficients with standard errors (SE) of the final multilevel model for traditional contraceptive method use and non-use

Variables	Traditional method		Non-use	
	$\hat{\beta}^{(1)}$	SE	$\hat{\beta}^{(2)}$	SE
Intercept	−0.531	0.171	−1.940	0.180
Asset wealth (ref.: poor)				
Medium	−0.117	0.082	0.025	0.083
Rich	−0.271*	0.091	−0.158	0.098
Access (opportunity cost)				
Region of residence† (ref.: Chisinau)				
North	0.586*	0.143	−0.201	0.138
Centre	0.364*	0.155	−0.027	0.149
South	0.251	0.169	−0.198	0.164
Type of residence (ref.: urban)				
Rural	0.375*	0.091	0.128	0.090
Family planning programme				
Exposure to media† (ref.: low)				
Medium	−0.278*	0.132	−0.130	0.141
High	−0.206	0.115	−0.168	0.127
Knows how to avoid AIDS (ref.: yes)				
No	0.109	0.105	0.366*	0.107
Unsure	0.059	0.079	0.007	0.082
Not heard of AIDS	0.115	0.262	0.655*	0.269
Use of induced abortion (ref.: none)				
1	−0.105	0.094	−0.541*	0.104
2 or more	−0.092	0.090	−0.291*	0.096
Last contraceptive discontinued† (ref.: no discontinuation)				
Modern	−0.124	0.165	0.556*	0.150
Traditional	0.293	0.181	0.273	0.194
Socio-demographic (control)				
Age in years† (ref: 35–49)				
25–34	−0.554*	0.137	−0.429*	0.148
15–24	−0.391*	0.178	−0.017	0.176
Parity (ref.: 2)				
Nulliparous	0.535*	0.181	2.059*	0.168
1	−0.004	0.104	0.524*	0.107
3 or more	0.057	0.097	−0.199	0.113
Birth in last year (ref.: no)				
Yes	1.257*	0.153	−0.069	0.172
Highest educational level (ref.: secondary or lower)				
Higher	−0.039	0.092	−0.383*	0.093

https://doi.org/10.1017/S0021932010000775 Published online by Cambridge University Press

Table 3. *Continued*

Variables	Traditional method		Non-use	
	$\hat{\beta}^{(1)}$	SE	$\hat{\beta}^{(2)}$	SE
Ethnicity (ref.: Moldovan)				
Romanian	−0.280	0.252	0.024	0.246
Ukrainian	−0.075	0.131	−0.287*	0.135
Russian	−0.013	0.140	−0.336*	0.141
Gagauzan	0.009	0.202	0.235	0.202
Bulgarian	0.567*	0.221	0.061	0.247
Other	0.192	0.309	0.418	0.304
Exposure to coitus (control)				
Fecundity (ref.: fecund)				
Amenorrhoeic, pregnant	0.381*	0.169	3.052*	0.159
Infecund, menopausal	0.426*	0.167	4.735*	0.141
Marital status (ref.: currently married)				
Never married	−0.535*	0.195	0.442*	0.163
Formerly married	−0.899*	0.215	1.965*	0.127
Recent sexual activity (ref.: yes)				
No/unsure	−0.229*	0.098	1.539*	0.087
Fertility preferences (ref.: wants no more)				
Wants a child within 2 years	0.037	0.144	1.022*	0.136
Wants a child, 2+ years	−0.173	0.127	−0.595*	0.135
Wants, unsure of timing	0.144	0.169	−0.414*	0.162
Undecided	0.040	0.203	−0.309	0.217
Can have no more	−2.532*	0.258	−1.423*	0.152
Interactions				
Age × Exposure to FP media				
25–34 × Medium	0.176	0.201	−0.053	0.212
25–34 × High	0.041	0.183	−0.214	0.200
15–24 × Medium	0.026	0.225	−0.563*	0.219
15–24 × High	−0.115	0.214	−0.796*	0.214
Region × Last contraceptive method discontinued				
North × Modern	−0.114	0.233	0.737*	0.224
Centre × Modern	−0.115	0.249	0.439	0.237
South × Modern	−0.057	0.266	1.112*	0.244
North × Traditional	−0.682*	0.236	0.414	0.259
Centre × Traditional	−0.071	0.242	0.661*	0.264
South × Traditional	−0.306	0.256	0.341	0.281

†Denotes involvement in 2-way interaction.
Model estimated using 80,000 MCMC samples with 5000 burn-in. Starting values for MCMC from 2nd order PQL (RIGLS).
*$p<0.05$.

https://doi.org/10.1017/S0021932010000775 Published online by Cambridge University Press

Table 4. Predicted probabilities of contraceptive method choice for selected main effects

Variables	Modern	Traditional	Non-use
Asset wealth			
Low	0.50	0.30	0.20
Medium	0.51	0.28	0.21
High	0.55	0.26	0.19
Type of residence			
Urban	0.50	0.30	0.20
Rural	0.43	0.38	0.19
Knows how to avoid AIDS			
Yes	0.50	0.30	0.20
No	0.44	0.30	0.26
Unsure	0.49	0.32	0.20
Not heard of AIDS	0.41	0.28	0.31
Birth in the past year			
No	0.50	0.30	0.20
Yes	0.28	0.61	0.11
Use of induced abortion			
None	0.50	0.30	0.20
1	0.56	0.31	0.13
2 or more	0.54	0.30	0.16

Women who had one or more induced abortions are significantly less likely to be non-users; instead they are significantly more likely to use a modern method. The magnitude of this effect is small, however: compared with a baseline woman (no abortions), the increase in modern method use due to 1 or 2 or more abortions amounts to only 6% and 4% points respectively. Although the effects are not significant, the probability of traditional method use is about 30% for women regardless of abortion experience, suggesting that abortion is not sufficient motivation to abandon traditional contraception for a more effective method.

The results show that the effect of previous discontinuation depends on regions of residence due to a significant interaction. For all regions outside of Chisinau, the probability of traditional method use is highest among women who reported no discontinuation, contrary to the results of Goldburg & Toros (1994) and Kost (1993). Regardless of region, women reporting any discontinuation have a high probability of non-use. This indicates that the majority of contraceptive discontinuation is followed by non-use, rather than method switching. This effect varies by region, however, with the probability of non-use being 8%, 7% and 20% points higher in the North, Centre and South regions compared with Chisinau. This is indicates that abandonment is highest in the regions outside the capital. For women who have discontinued a traditional method, the probability of modern method use is slightly lower in the North and South regions and especially in the Centre region compared with Chisinau (Fig. 3). This indicates that modern method use following a traditional method

https://doi.org/10.1017/S0021932010000775 Published online by Cambridge University Press

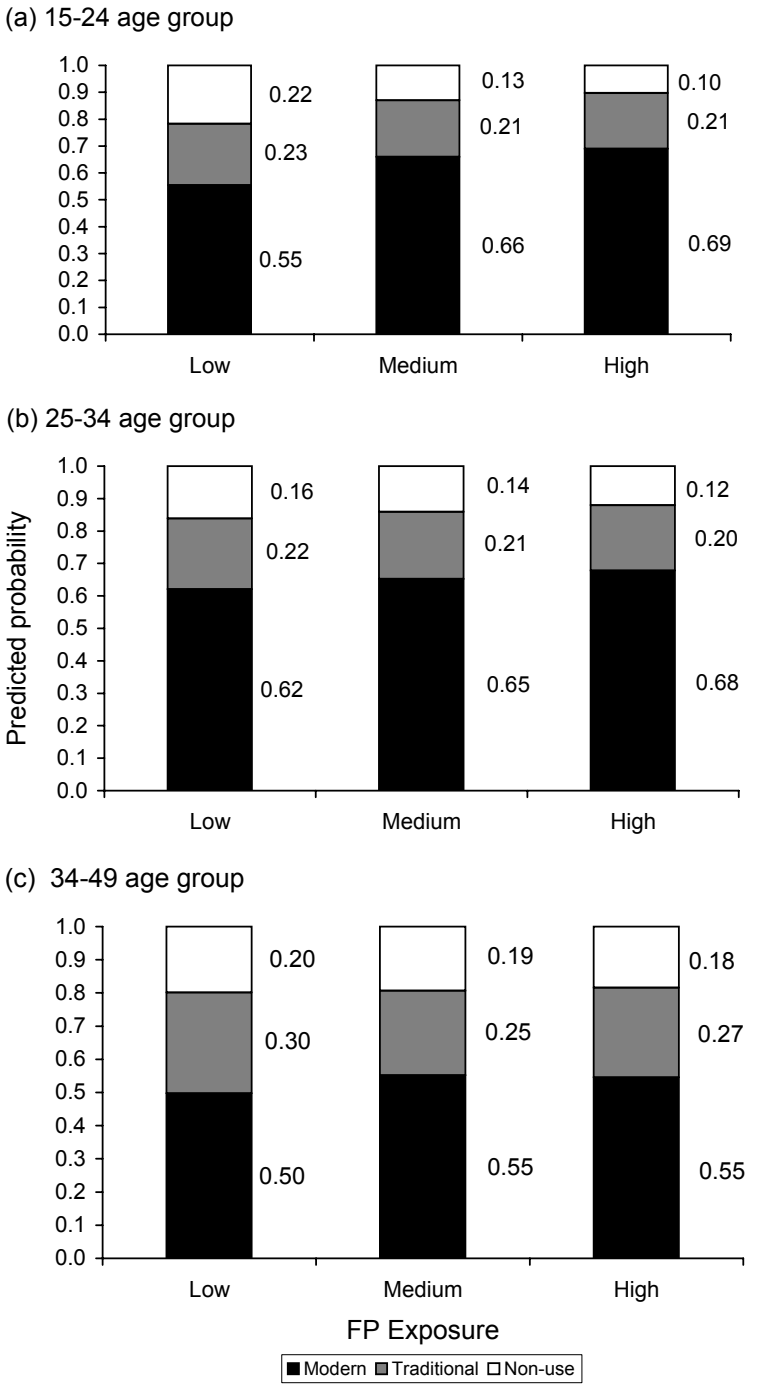

Fig. 2. Predicted probabilities of contraceptive method use by family planning media exposure and age groups.

https://doi.org/10.1017/S0021932010000775 Published online by Cambridge University Press

discontinuation is less common outside of Chisinau. The probability of traditional method use given a previous modern method discontinuation is low in all regions, suggesting that switching from modern to traditional methods is rare.

With respect to other control variables, the probability of traditional or non-use is lower among younger women. These results are consistent with the findings of Westoff (2005) and Robinson (1996). Considering the effect of the number of living children, nulliparous women are most likely to use a traditional method. This is consistent with the findings of Magadi & Curtis (2003). There is also high traditional method use among women with three or more children, although this effect is not significant. Nulliparous and parity one women are considerably more likely to be non-users, suggesting that modern contraceptive use is concentrated among higher parity women. Those who have had a birth within the past year have a high probability of traditional method use (Table 4). This is attributed to the use of LAM. There is also a low propensity to use a modern method in the first year postpartum. Presumably women with a recent birth may not resume modern method use immediately postpartum, which explains the slow uptake of modern methods.

When compared with women with secondary education, those with higher education are less likely to use traditional methods. The estimated size of this effect is small and non-significant after controlling for asset wealth and residence. The effect of education is significant for non-use, perhaps indicating an increase in overall contraceptive use among women with high education; this finding is consistent with the findings of Robinson (1996). Due to data sparsity, religion, however, was not significant in the final model. It was expected that religion would be a key determinant of contraceptive choice (Christopher, 2006). Ethnicity, which is associated with religious affiliation (χ^2=224.4 on 24 df, p<0.01), is significant in the final model, although the only significant category is the Bulgarians, who are more likely to use traditional methods compared with Moldovan women. As expected, women with a low risk of pregnancy (depending on their fecundity, sexual activity and marital status) have a lower probability of traditional method use, and higher probability of non-use. Women who want a birth within the next 2 years are substantially more likely to use no method, while traditional method and non-use are significantly higher among women who believe they are infecund.

Discussion and policy recommendations

This study presents a conceptual framework based on existing literature that forms the basis for testing the key research hypotheses. The analysis confirms the main hypothesis that economic disadvantage and spatial isolation increase traditional contraceptive method use. Although the analysis was unable to investigate the direct costs of contraception, the findings support the argument that poor and unstable economic conditions can deter women from using modern methods and compel them to use traditional methods. This finding is consistent with the Easterlin framework for contraceptive use (Easterlin, 1979), and mirrors the outcome in many other former socialist countries, where prohibitive method costs limit modern method uptake (Serbanescu *et al.*, 1995; Johnson *et al.*, 2004). Considering the effect of indirect costs, traditional method use is greater among women in rural areas and those residing in

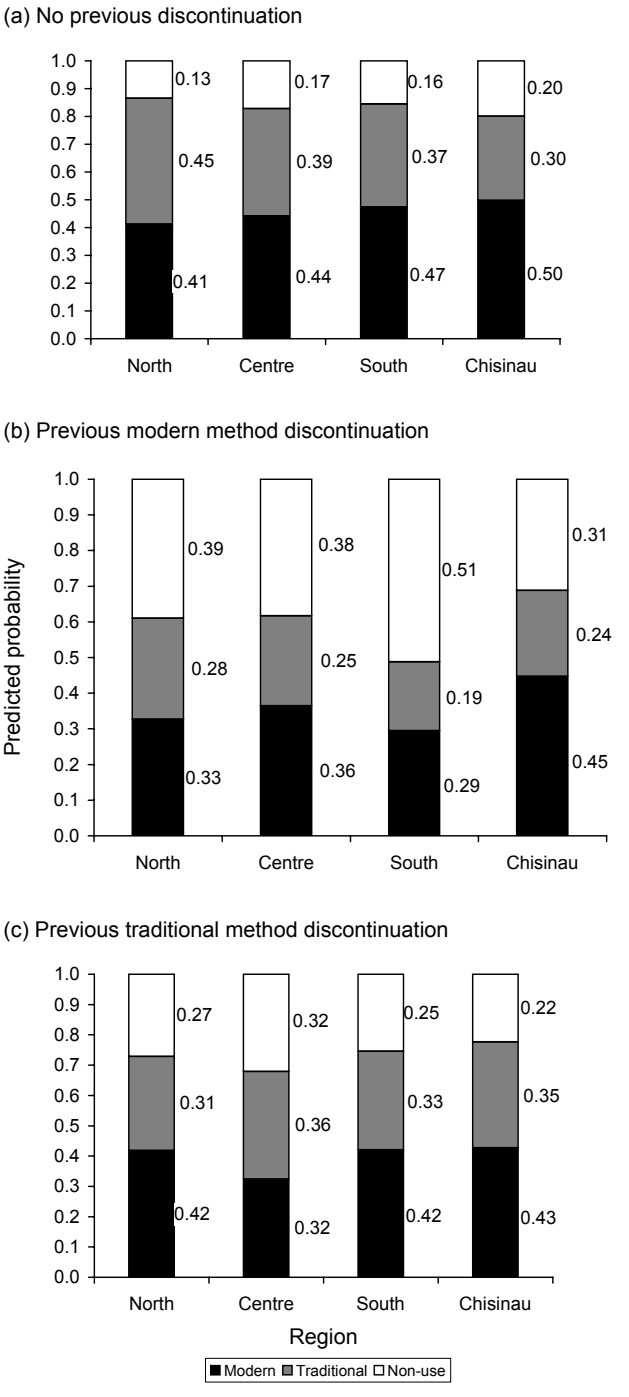

Fig. 3. Predicted probabilities of contraceptive method use by region and previous discontinuation.

https://doi.org/10.1017/S0021932010000775 Published online by Cambridge University Press

areas outside the capital region, suggesting possible high opportunity costs in accessing a modern method. The evaluation of family planning programme effects indicates that higher family planning media exposure has only a marginal effect on traditional method use, but increases the probability of modern method use. This finding contrasts somewhat with outcomes in other post-socialist republics, where increases in family planning awareness had little influence on modern method uptake (Carlson & Lamb, 2003). However, this impact is observed only at younger ages, and the effect attenuates with age. Knowledge of HIV/AIDS has no effect on traditional method choice, as expected, but has a positive effect on modern method use, though condom use is extremely low. Indeed, the low prevalence of condom use in Moldova precludes the specification of barrier contraceptives as a separate method type, limiting the analysis to the broader category of 'modern methods'. Family planning programmes designed to encourage women to switch from traditional to modern methods have some success, although the effect is considerably reduced in regions outside of Chisinau. Previous induced abortion experiences do not influence traditional method use, but reduce non-use and increases modern method use. This suggests that abortion alone is not sufficient to motivate women to discontinue traditional methods in favour of modern methods. Traditional method use is greater among older, nulliparous and high-parity women. As expected, women who had a birth within the last year are significantly more likely to use a traditional method. The results show an influence of contraceptive networks on method choice, consistent with the findings of Kohler *et al.* (2002) and Montgomery & Casterline (1996), who identified the importance of peer networks on choice of contraceptive method. Furthermore, this study shows that the correlates of traditional method use are different from those of non-use. The present analyses identified network effects but, due to lack of community-level data, could not explore further the nature of these networks (i.e. if sparse or dense, Kohler *et al.*, 2002) or the exact interaction between the individual and her peer network.

The policy implications of these results are wide-ranging. Efforts directed towards the poorest – for example potential contraceptive subsidies – may have limited impact in increasing modern method use due to the small effect of economic wealth. Interventions targeted at, and designed for, older women could increase modern method use and reduce the burden of unwanted pregnancies and induced abortions, since these women are unresponsive to existing efforts (Agajanian, 2002; Westoff, 2005, 2000). This could be best achieved by integrating family planning media with existing services used by older women, for example maternity or abortion services, and by improving access to family planning counselling services, which are currently neglected (Comendant, 2005). Despite efforts in the NPRH to increase the use of modern methods post-abortion, this analysis found only a limited increase in the propensity to use modern methods for women with abortion experience. Interventions such as those highlighted by Comendant (2005), which facilitate both post-abortion and FP/RH counselling, are therefore vital to improving the interaction between women and service providers.

The results indicate that there is some effect of isolation from services that increases reliance on traditional contraception. Although the NPRH has attempted to improve provision in communities through the primary health care network, a lack of

availability of modern contraception clearly persists, limiting the potential for switching from traditional to modern methods in these regions. This is an intervention point for future FP/RH programmes aimed at improving the coverage of contraceptive provision in rural areas and regions outside Chisinau.

Finally, although NPAIDS has presumably contributed to increasing the uptake of modern contraceptives, about one in five women are unaware of either AIDS or its transmission routes. These women are significantly more likely to be non-users, and hence have no protection against HIV/AIDS. This analysis shows low probability of condom use in Moldova, even among women who have the highest awareness of AIDS, indicating that there is little impact of NPAIDS on their contraceptive choice. Thus NPAIDS needs to increase efforts to ensure that women at risk of HIV/AIDS receive adequate information to protect themselves from infections, and that information is sufficiently translated into behavioural change.

Acknowledgments

The authors thank the UK Economic and Social Research Council for providing financial support (PTA-031-2006-00188) and two anonymous referees for providing invaluable comments and suggestions.

References

Agadjanian, V. (2002) Is abortion culture fading in the Former Soviet Union? Views about abortion and contraception in Kazakhstan. *Studies in Family Planning* **33**(3), 237–248.

Carlson, E. & Lamb, V. (2001) Changes in contraceptive use in Bulgaria, 1995–2000. *Studies in Family Planning* **32**(4), 329–338.

Christopher, E. (2006) Religious aspects of contraception. *Reviews in Gynaecological and Perinatal Practice* **6**, 192–198.

Comendant, R. (2005) A project to improve the quality of abortion services in Moldova. *Reproductive Health Matters* **13**(26), 93–100.

Council of Europe (2004) *Recent Demographic Developments in Europe*. Council of Europe Publishing, Strasbourg. URL: http://www.coe.int/t/e/social_cohesion/population/Demo2004EN.pdf (accessed 4th May 2009).

Easterlin, R. A. (1979) An economic framework for fertility analysis. *Studies in Family Planning* **6**(3), 54–63.

Filmer, D. & Pritchett, L. H. (2001) Estimating wealth effects without expenditure data – or tears: an application to educational enrolments in states of India. *Demography* **38**(1), 115–132.

Fisher, K. & Szreter, S. (2003) They prefer withdrawal: the choice of birth control in Britain, 1918–1950. *Journal of Interdisciplinary History* **34**(2), 263–291.

Goldburg, H. L. & Toros, A. (1994) The use of traditional methods of contraception among Turkish couples. *Studies in Family Planning* **25**(2), 122–128.

Johnson, B. R., Horga, M. & Fajans, P. (2004) A strategic assessment of abortion and contraception in Romania. *Reproductive Health Matters* **12**(24), 184–194.

Kennedy, K. I. & Trussel, J. (2004) Postpartum contraception and lactation in contraceptive technology. In Hatcher, R. *et al.* (ed.) *Contraceptive Technology*, 18th edition, revised. Ardent Media, New York, pp. 575–600.

Kohler, H-P., Behrman, J. R. & Watkins, S. C. (2001) The density of social networks and fertility decisions: evidence from South Nyanza district, Kenya. *Demography* **38**(1), 43–58.

Kost, K. (1993) The dynamics of contraceptive use in Peru. *Studies in Family Planning* **24**(2), 109–119.

Kowal, D. (2004) Coitus interruptus (withdrawal). In Hatcher, R. *et al. Contraceptive Technology*, 18th edition, revised. Ardent Media, New York, pp. 311–315.

Lindstrom, D. P. & Munoz-Franco, E. (2005) Migration and the diffusion of modern contraceptive knowledge and use in rural Guatemala. *Studies in Family Planning* **36**(4), 277–288.

MacLehose, L. & McKee, M. (2002) *Health Care Systems in Transition: Republic of Moldova*. European Observatory on Health Care Systems, Copenhagen. URL: http://www.euro.who.int/__data/assets/pdf_file/0006/95163/e81265.pdf

Magadi, M. A. & Curtis, S. L. (2003) Trends and determinants of contraceptive method choice in Kenya. *Studies in Family Planning* **34**(3), 149–159.

Montgomery, M. R. & Casterline, J. B. (1996) Social learning, social influence and new models of fertility. *Population and Development Review* **22** (Supplement), 151–175.

NCPM & ORC Macro (2006) *Moldova Demographic and Health Survey 2005*. National Scientific and Applied Center for Preventive Medicine of the Ministry of Health and Social Protection, Republic of Moldova, and ORC Macro Calverton, MD.

Nye, R. A. & van Poppel, F. (2003) Fertility and contraception during the demographic transition: qualitative and quantitative approaches. *Journal of Interdisciplinary History* **34**(2), 141–154.

Pariani, S., Heer, D. M. & Van Arsdol, M. D. Jr (1991) Does choice make a difference to contraceptive use? Evidence from East Java. *Studies in Family Planning* **22**(6), 384–390.

Popov, A. A., Visser, A. Ph. & Ketting, E. (1993) Contraceptive knowledge, attitudes, and practice in Russia during the 1980s. *Studies in Family Planning* **24**, 227–235.

Robinson, K. M. (1996) *Education and Traditional Contraceptive Use: An Analysis of Nine Countries using Demographic and Health Survey Data*. Centre for Global Initiatives, University of North Carolina, Chapel Hill. URL: http://cgi.unc.edu/research/pdf/contra.pdf (accessed 9th December 2008).

Rogow, D. & Horowitz, S. (1995) Withdrawal: a review of the literature and an agenda for research. *Studies in Family Planning* **26**(3), 140–153.

Santow, G. (1993) Coitus interruptus in the twentieth century. *Population and Development Review* **19**(4), 767–792.

Santow, G. (1995) Coitus interruptus and the control of natural fertility. *Population Studies* **49**(1), 19–43.

Serbanescu, F., Morris, L., Stupp, P. & Stanescu, A. (1995) The impact of recent policy changes on fertility, abortion, and contraceptive use in Romania. *Studies in Family Planning* **26**(2), 76–87.

Swar-Eldahab, A. M. (1993) Constraints on effective family planning in urban Sudan. *Studies in Family Planning* **24**(6), 366–374.

United Nations (1995) *Programme of Action of the International Conference on Population and Development*, Cairo, Egypt, September 5–13th, 1994. In *Report of the International Conference on Population and Development*. UN, New York.

United Nations (2007) *World Contraceptive Use 2007*. URL: http://www.un.org/esa/population/publications/contraceptive2007/contraceptive2007.htm (accessed 23rd October 2009).

Westoff, C. (2000) *The Substitution of Contraception for Abortion in Kazakhstan in the 1990s*. DHS Analytical Studies No. 1. ORC Macro, Calverton, MD.

Westoff, C. (2005) *Recent Trends in Abortion and Contraception in 12 Countries*. DHS Analytical Studies No. 8. ORC Macro, Calverton, MD.

World Bank (2005) *Moldova: Opportunities for Accelerated Growth. A Country Economic Memorandum for the Republic of Moldova*. Poverty Reduction and Economic Management Unit, Europe and Central Asia Region, World Bank. URL: http://siteresources.worldbank.org/INTMOLDOVA/Resources/cem05.pdf (accessed 4th May 2009).

World Health Organization (2004) *Abortion and Contraception in Romania. A Strategic Assessment of Policy, Programme and Research Issues*. World Health Organization, Geneva. URL: http://www.who.int/reproductivehealth/publications/unsafe_abortion/9739953166/en/index.html (accessed 24th August 2010).