

Original research article

# The relationship between contraceptive use and maternal and infant health outcomes in Tajikistan<sup>☆</sup>

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Received 31 July 2015; revised 6 November 2015; accepted 10 November 2015

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## Abstract

**Objective:** There has been no evaluation of the association between contraceptive use and maternal and child health (MCH) in Tajikistan, though the government has made concerted efforts to improve accessibility to family planning methods. The aim of this study is to understand the relationship between current contraceptive utilization and specific MCH outcomes in Tajikistan.

**Study Design:** Using data from the 2012 Tajikistan Demographic and Health Survey, a total weighted sample of 6716 women aged 15 to 49 years who had at least one child at the time of interview was analyzed. Logistic regression analyses were performed to assess the relationship between current contraceptive utilization and birth spacing, birth limiting and infant mortality.

**Results:** Modern contraceptive use was low among women studied (27.1%). Modern contraceptive users were more likely to present with a longer birth interval [adjusted odds ratio (aOR) = 2.4, 95% confidence interval (CI) = 2.0–2.8] than traditional or nonusers. Women who used modern contraceptives were half as likely to limit births to three or fewer children compared to traditional or nonusers (aOR = 0.5, 95% CI = 0.4–0.6). Among women whose most recent live birth resulted in death, modern contraceptive use was not associated with lower levels of infant mortality.

**Conclusion:** Efforts made by the Tajik government to increase utilization of family planning have had mixed effects on overall uptake and the MCH outcomes analyzed in this study. These findings can help to inform the government's policy on family planning.

**Implications:** Contraceptive utilization has not yet translated into beneficial MCH outcomes. Policy makers in Tajikistan might consider placing more emphasis on family planning education, while maximizing accessibility of contraceptive methods.

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*Keywords:* Contraception; Tajikistan; Birth spacing; Birth limiting; Infant mortality; Maternal health

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## 1. Introduction

A large body of evidence supports the use of contraceptives in the promotion of safe motherhood and infant health [1]. Contraceptive use enables women of high parity to reduce unwanted pregnancies and unsafe abortions, decreasing the risk of maternal and infant death [1,2]. Moreover, it allows for women to lengthen intervals between births [3]. Birth intervals of less than 24 months do not present a suitable recovery time period for the mother and are associated with a 7.5% increase in infant mortality [1,3,4]. Evidence has also shown that contraceptive use during birth intervals has a positive impact on maternal and infant mortality [5,6]. Thus, contraceptive use reduces maternal

and, indirectly, infant mortality, through the prevention of unwanted pregnancies and improved spacing between births [1–3].

Tajikistan's transition from a socialist republic under the Soviet Union to a democratic sovereign nation has had a profound impact on the country's health system [7]. As a result of the Soviet Union collapse and subsequent civil war, health funding in Tajikistan declined from 6% of gross domestic product in 1991 to 1.1% in 1996, severely constraining the provision of health services, including primary and preventive care, as well as family planning programming [7–9]. Maternal and child health (MCH) outcomes in Tajikistan continue to suffer the consequences of a lack of access to modern contraceptive methods during the Soviet era [7].

In an attempt to address these challenges, the Tajik government adopted the Strategic Plan for Reproductive

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<sup>☆</sup> Conflicts of Interest: None.

Health, which set specific priorities and targets to improve maternal health status between 2005 and 2014 [10]. By increasing access to quality contraceptive methods and family planning services, amongst other priorities, the Strategic Plan for Reproductive Health targeted a reduction in maternal mortality ratio from 49.6 in 2002 to 35 in 2014 (per 100,000 live births) and a reduction in infant mortality rate from 85 in 2002 to 28 in 2014 (per 1000 live births) [10]. The 2013 World Bank data estimate Tajikistan's maternal mortality ratio at 44.0 per 100,000 live births [11]. According to data from the 2012 Tajikistan Demographic and Health Survey (DHS), the infant mortality rate is 37.0 per 1000 live births [8].

Contraceptive utilization in Tajikistan has only been evaluated descriptively as it relates to individual- and community-level social and economic inequalities [9]. Data from the 2005 Tajikistan DHS reported 33% of married women using modern contraceptives with a reduced utilization among women with lower education and socioeconomic status [9]. Little is known if and how access to modern contraceptive methods in Tajikistan has translated into improvements in the status of maternal and infant health.

The aim of this study is to understand the relationship between current modern contraceptive utilization and specific MCH outcomes in Tajikistan among women of reproductive age (15–49 years) who have had at least one child. Using data from the 2012 Tajikistan DHS, the association between current modern contraceptive use and each of birth spacing, birth limiting and infant mortality were investigated. Given the growing body of evidence on the beneficial impacts of modern contraceptive use on MCH outcomes [3–8], as well as its superior effectiveness compared to traditional contraceptives [12], it was hypothesized that modern contraceptive users will present with a longer birth interval (24 months or greater), lower birth orders (three or fewer children) and lower levels of infant mortality.

## 2. Materials and methods

Data from the 2012 Tajikistan DHS were used to construct a database of indicators, exposures and outcomes of interest for this study. The DHS, in collaboration with the Statistical Agency and Ministry of Health of Tajikistan, conducted interviews with eligible women in late 2012. Eligible women were defined as women aged 15 to 49 who had slept in the household the night before the interview took place. To obtain national representation among women interviewed, the 2012 Tajikistan DHS oversampled rural households, as only 32.6% of households in Tajikistan are urban. DHS-defined individual sampling weights were applied to each interview response to adjust for differences in the probability of interview selection and nonresponse. Unweighted frequencies are presented in the tables for reference.

From a nationally representative sample of 6674 households, 9656 Tajik women were interviewed. For this specific study, eligible women included 6176 (64%) Tajik women who had at least one child at the time of interview.

Three MCH outcome variables were studied: birth spacing, birth limiting and infant mortality of respondents' most recent live birth. Variables were dichotomized using established evidence to assess relationships between contraceptive use and each MCH outcome [1–6].

1. Birth spacing. The difference, in months, between the most recent birth and previous birth. Birth intervals were dichotomized to either less than 24 months or 24 months or more.
2. Birth limiting. A dichotomous variable denoted as either three or fewer children ever born (low-risk birth order) or more than three children ever born (high-risk birth order).
3. Infant mortality. Calculated from the DHS variable for age at death of the most recent child born to women who were interviewed, infant mortality was denoted as death of a child within 12 months after birth. Noninfant mortality was denoted as death of a child more than 12 months after birth. Respondents whose most recent live birth did not result in death were excluded.

The main exposure variable examined in this analysis was current contraceptive use, defined in the 2012 Tajikistan DHS as follows:

1. No method,
2. Modern method [i.e., female sterilization, birth control pill, intrauterine device (IUD), injectables, implants, male condom, foam/jelly/diaphragm, lactational amenorrhea method (LAM) or other modern method] or
3. Traditional method [i.e., rhythm (calendar) method, withdrawal or other traditional method] [8].

Independent variables were included to control for sociodemographic and care-seeking factors directly related to contraceptive use. These variables were as follows: highest level of education achieved, urban or rural residence, individual wealth quintile (as defined by the Tajikistan DHS), maternal age and visitation by a family planning worker in the 12 months preceding the interview [8]. As family planning workers provide information on the use and benefits of modern contraception, it was hypothesized that respondents receiving this education would be more likely to use modern contraceptive methods and, thus, present with positive MCH outcomes [8].

Weighted and unweighted descriptive statistics were generated for select demographic and family planning characteristics of Tajik women eligible for this study. Residence and age were found to be effect measure modifiers of the relationship between modern contraceptive use and the MCH outcome variables.

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