Polygyny and the Number of Children Ever Born in Afghanistan: Evidence from Afghanistan DHS 2015

Abstract

Background: Polygynous marriage is prevalent in Afghanistan, yet there is no research on the association between polygyny and the number of children ever born (CEB) in the context of Afghanistan. This study aimed to examine the association between polygyny and the number of CEBs in Afghanistan.

Methods: A Zero-Inflated Negative Binomial (ZINB) regression model and marginal effect analysis were applied to the 2015 Afghanistan Demographic and Health Survey (AFDHS) with a sample (N=28,898 women aged 15-49). CEB measured the number of children that a woman gave birth to; polygyny was measured by polygyny and monogamy. All analyses were conducted by using STATA V.18.1.

Results: About 7% of the sample were polygynous married, and polygynous marriage had a 5.2% to 10.2% lower likelihood of CEB than monogamous unions. The results show that factors such as age at first marriage, current age, rank among wives, education level, residency, and household wealth status significantly influence the number of CEB. with higher education levels, and delayed marriages associated with fewer CEB. Education strongly moderated the association between polygyny and CEB.

Conclusion: Our study suggests that the key reason for the decrease in CEB between polygynous and monogamous partnerships is women's increased education and delayed marriage. Increasing the current age, urban residency, and higher status among the co-wives increased the number of CEB. The study concludes by suggesting that increasing access to family planning and promoting women's education could help balance the differences in CEB between polygyny and monogamy in Afghanistan.

Keywords: Polygyny, Children ever-born (CEB), Rank-waives, AFDHS, Afghanistan

Introduction

Polygyny is a type of marriage in which a man marries more than one woman simultaneously (Mulder & Caro, 1983; Smith-Greenaway & Trinitapoli, 2014). According to statistics, polygyny is most commonly practiced in sub-Saharan Africa, particularly in countries with a Muslim majority, although, this practice is rare in many countries. Demographic Health Survey (DHS) data show that polygyny is prevalent in sub-Saharan Africa (Adedini & Odimegwu, 2017; Ahinkorah, 2021; Cook, 2007), some lowland South American societies, and the Middle East (Jadhav & Vala-Haynes, 2018; Slonim-Nevo et al., 2008). Generally, polygyny is more common in rural areas than in urban areas, with a wide variation in the proportion of polygynists around the world (Agadjanian & Ezeh, 2000; Ahinkorah, 2021; Ahmed, 1986; Cahu et al., 2011). In Afghanistan, polygyny is prevalent under certain circumstances (Ayoubi & Ayoubi, 2024), with approximately 6 percent of currently married women aged 15-49 being polygynous married (CSO et al., 2017b).

The number of CEB varies between polygynous and monogamous couples depending on socioeconomic circumstances. According to research, polygynous unions frequently have distinct decision-making structures compared to monogamous households, which can result in varying economic outcomes and potentially alter family size (Hidrobo et al., 2021). Additionally, demographic and socioeconomic characteristics, type of residency, traditional norms, and religious connections are associated with the type of marriage, which may influence family planning and the number of CEBs (Osmond, 1965).

The association between polygyny and CEB has been a subject of academic research, leading to multiple arguments and critiques in population studies. While some research reported lower fertility rates among women in polygynous marriages (Lorimer, 1954; Bean & Mineau, 1986). Others found that women in polygynous marriages are as fertile as those in monogamous marriages (Sichona, 1993). Additionally, some studies suggest that polygyny can increase fertility in modernized settings by adopting a transformed notion (Tertilt, 2005; Whitehouse, 2018). However, the association between polygyny and reproduction varies greatly across regions, the status of women, age groups, and other socio-economic factors influence the number of CEB (Lardoux & van de Walle, 2003; Mhele, 2015; Ramsay, 2014; Rutayisire et al., 2014; Westoff, 1990; Westoff et al., 2013).

Data and settings

This study used data from the 2015 Afghanistan Demographic and Health Survey (AFDHS)(CSO et al., 2017a). The DHS conducted every five years in many nations, is a nationally representative survey that employs a multi-stage sample method. The 2015 AFDHS used a two-stage stratified sampling technique to collect data on key indicators from both urban and rural areas in the 34 provinces of Afghanistan. For this study, we used the women's dataset, concentrating on married women who had answered questions on polygyny status and CEB. We used listwise deletion for missing data under the assumption that it was missing at random, and we retained a sample of 28,898 respondents. This method was selected because of its simplicity and minimal missing data (Bennett, 2001; Eekhout et al., 2014; McNeish, 2017). This study sheds light on the complexities of reproduction dynamics in the context of Afghanistan by analyzing the influence of marriage type on the number of CEBs. We used the ZINB regression model, and marginal effect analysis, to understand how demographic and social characteristics influence reproductive behaviors in different marital contexts.

Analytical strategy

For our analysis, we utilized the 2015 DHS dataset for Afghanistan. To check the association between marriage status and CEB and the other covariates, descriptive statistics were calculated using frequencies, percentages, and chi-square test to summarize the sample's sociodemographic characteristics. We construct a graph illustrating the number of CEB by rank among co-waives and monogamy across different age groups. Given that CEB is a count response variable that includes zero responses, this study aimed to develop a regression model using ZINB regression, this model allows us to examine the factors that affect the number of CEB while accounting for the inflation in the count data. In the ZINB model, we include the exposure option of the current age to ensure that the coefficients in the model accurately reflect the relationship between the independent variables and CEB. The ZINB model is suitable for the current study, as the variance (8.64) of the CEB variable significantly exceeded its mean (4.27), indicating overdispersion. Coefficients were exponentiated to yield incidence rate ratios (IRRs) (Long & Freese, 2006). The IRR describes how changes in the independent variables (X) affect the frequency at which the dependent variable Y (CEB) occurs (Cameron & Trivedi, 2013; Long & Freese, 2006).

To determine the factors associated with the change in the number of CEB, a marginal effect on the E (Y | X) model was used to partition the change in the mean of CEB (Y) into components attributable to changing characteristics of women and that due to the changing reproductive behavior of women (X) (Cameron & Trivedi, 2013; Long & Freese, 2006; Nguyen, 2020). This technique also partitions the two components into portions that represent the unique contribution of each predictor to the components. Marginal effects describe how the rate varies in response to a specific change in one independent variable while keeping all other variables constant.

Result

Table 3 illustrates the results of a ZINB that investigates the association between polygyny status and the number of CEBs. In the Unadjusted Model, the focus is on the basic relationship

between polygyny and the number of CEB, without considering other potential influencing factors. In the unadjusted model, one unit increase in polygynous marriage is associated with a 5.2% (UIRR = 0.948, P<0.01) lower likelihood of CEB; after adjusting for other variables, it changed to 10.5 % (AIRR = 0.895, P<0.01) lower likelihood of CEB. In the moderation model, the association changed to 9.3% (MIRR = 0.907, P<0.05) lower number of CEB compared to women in monogamous unions. Those with higher levels of education were associated with about 2.5 to 3.5% (P<0.01) lower likelihood of CEB in all three models. The interaction term shows that there is a positive relationship between education and polygyny, with a one-unit increase in education, 1.3% (MIRR = 1.013, P<0.1) of CEB will increase for polygynous marriage. A positive interaction term suggests that the negative effect of polygyny on the number of CEB is lessened as a woman's level of education increases. In simpler terms, while polygyny is generally associated with having fewer children compared to monogamous marriages, this difference decreases among women with higher levels of education.

Those who were married under 15 years old had a 25.9% (UIRR= 1.259, P<0.01) and 29.4% (AIRR= 1.237, P<0.01) 30% (AIRR= 1.300, P<0.01) higher likelihood of CEB, which is highly significant compared to those who were married at the age 16 and above. Women who ranked second and above had 13.2% (UIRR= 0.868, P<0.01), and 5.7% (AIRR= 0.943, P<0.05) lower CEB, compared to the first rank. Women who were in the monogamous union had 3.5% (UIRR= 0.965, P<0.1) less CEB, and about 7.8% in the adjusted model at (P<0.05) lower likelihood of CEB compared to the first rank of wife in the polygynous union.

Other variables, such as current age, contraceptive method, and residency have a positive association with the number of CEB at (p<0.01), and household wealth has a negative association with the number of CEB at (p<0.01), indicating that wealthier families have lower CEB. This analysis shows that polygynous marriages have lower CEB than monogamous marriages, even after adjusting for various sociodemographic factors.

Marginal effect analysis

Being in a polygynous marriage, compared to a monogamous one, has a statistically significant marginal effect of 0.874 on the number of CEB (p< 0.01), indicating a negative impact of polygyny on CEB. Each additional year of education decreases the number of CEB by 0.088. A one standard deviation increase in education reduces the number of CEB by 0.261. The overall marginal effect was a decrease of 0.089 in the number of CEBs. Women who marry under 15 years old have, on average, 1.196 more children than those who marry after 16 years old, indicating a significant (p < 0.01) positive effect on CEB. Users of traditional (0.057) and modern (0.899) contraceptives significantly have a higher number of CEB compared with non-users, and modern users have less CEB than traditional users of contraceptives.

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