

# Sex-Composition of Living Children and Women's Fertility Desire in Vietnam

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## Abstract

**Objective:** To investigate the relationship between sex-composition of children and women's fertility desire in Vietnam.

**Materials and methods:** Using data from the 2014 Vietnam Multiple Indicator Cluster Survey (MICS), we investigate the association between sex composition of children and desire for additional children among women in reproductive age (15 to 49 years) across Vietnam (N=5,605).

**Results:** Multivariate logistic regression models showed statistically significant association between sex composition of children and women's fertility desire, after controlling for social norms of fertility preference, demographic and socioeconomic factors. For each group of women (those with one child, two children, and three or more children) women with no sons are more likely to have higher fertility desire compared to women with at least one son. However, women with both son (s) and daughter (s) tend to have lower fertility desire compared to those who have all sons.

**Conclusion:** Vietnam's traditional cultural norm of son preference has a strong influence on fertility desire. Besides, mix-gender preference is also documented. The government should enforce the law more strictly regarding the prohibition of ultrasounds to detect fetal sex to reduce the feasibility of sex selection abortion. In addition, the government should improve the social ideology of the role of women in the family and society through mass media.

**Keywords:** Sex Composition; Fertility Desire; Son Preference; Mix-Gender Preference; Gender Norms; Vietnam

## Introduction

Understanding fertility trends and factors affecting fertility is crucial for policy makers and development planners, as there are many important policy implications. Research has shown that fertility desire and actual fertility have a close relationship (1). Fertility desire is defined as the desire to have another

child in the future. Researchers study fertility desire for two main reasons, namely, to predict future fertility and to find the factors that influence fertility desire (2, 3). In this paper, we are particularly interested in the impact of sex composition of living children on fertility desire in Vietnam.

Vietnam presents a unique and compelling social context to examine women's fertility desire for several reasons. First, Vietnam implemented a national family planning policy, the one-or-two-child policy in 1988 to limit the fertility of couples who are employed in

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government entities or are members of the Communist party to have no more than two children. This policy could be considered a special policy for controlling national fertility in the same way as "one-child policy" in China. This policy has had a lasting impact on Vietnam's population as having two children seems to have become a norm in Vietnam (4).

Second, the number of children a woman desires is also shaped by cultural norms regarding the gender composition of children. The cultural norm of son preference contributes to Vietnam's continued high sex ratio at birth (SRB). Couples may determine the gender composition of their children through pre-pregnancy methods or by sex-selective abortion due to the increased availability of ultrasounds and advanced health services to select the gender of their child (5). Although Vietnam's government has taken many steps to prevent imbalanced SRB, the SRB has continued to increase over the years and has shown no signs of stopping (6).

Finally, the Ministry of Health of Vietnam through the 2011-2020 Population and Reproductive Health Strategy for Vietnam seeks to maintain reasonably low fertility (total fertility rate (TFR) of 1.9 children/woman) and to stabilize the population size to 115-120 million people by 2050. Therefore, one urgent requirement is to understand fertility trends and projections based on fertility desires. Understanding the factors that influence women's fertility desire is thus an urgent task to better inform national family planning policies.

A few studies reveal that sex composition of previous children and fertility desire have tight relationship. Depending on the area of study, the results found notable differences (7-10). First, in countries with son preference such as Nepal, India, Bangladesh and China, sex composition of previous children, as illustrated by the number of sons, is a key determinant of fertility desire (8, 10). In societies with son preference, sons are more important because sons are a security for old age, and take on roles such as worshipping ancestors, continuing the family name and raising the status of parents in society (11-14). Second, preference for mixed-sex composition is quite common in Western countries, and some parts of India (15, 16). For example, families in Madhya Pradesh have a standard for children's sex composition being two sons and a daughter. The highest proportion of those who desire to have another child is found in the group having two girls only, relative to otherwise (9). Last, daughter preference is found in the Czech

Republic, Lithuania, Sweden and Portugal (17). In addition, no gender preference is found in Finland, France, Western Germany, Norway, and Poland (17).

Vietnam has experienced rapid fertility decline from the middle of the 20<sup>th</sup> century with a TFR of 6.14 in 1960-65 dropping to 1.95 in 2015-2020 (18). There is, however, large sub-national differences in fertility rates. In 2014, the South East experienced the lowest fertility rate (1.56 children/women) meanwhile Red River Delta reported 2.35 children/women (19).

One of the unique aspects of fertility transition in Vietnam is that fertility decline has been accompanied by high SRB, which is driven by son preference. Although the SRB has fluctuated since the end of the 20<sup>th</sup> century, it has been above the standard WHO and Hardy (20) guideline of 105 boys/100 girls, ranging from 103 to 106, with the highest of 113.8 in 2013.

The high SRB is driven by underlying norms for son preference. Son preference is well documented in Vietnam (21, 22), and the explanation can be based on culture, religion and belief system of the Vietnamese. Vietnamese parents believe boys are more valuable than girls (23). Sons take on the crucial role of continuing the family name, and sons receive more economic and social benefits than daughters, for example inheriting assets such as land or house, and worshipping ancestors or undertaking religious roles. Unless at least one son is born, women experience high pressure from her husband's family, especially her mother-in-law and her husband (23).

Consequently, the sex composition of children is typically uneven in favour of boys. United Nations Fund for Population Activities (UNFPA) has predicted that the proportion of families with only sons will increase in line with high sex ratio at birth (SRB) in Vietnam (24).

To our knowledge, there is no existing study on the relationship between sex composition of children and fertility desire in Vietnam. Therefore, our study makes a significant contribution to the existing literature on fertility dynamics in developing countries more broadly, and in Southeast Asia more specifically. The highlight of this article is that it not only assesses Vietnamese women's fertility desire based on the number of sons, but also adds to the literature regarding the role of mix-gender preference in women's fertility desire.

## **Materials and methods**

Our study draws on nationally representative data from the 2014 Vietnam Multiple Indicator Cluster Survey (MICS). The information collected is related

to women of reproductive age (15 to 49 years). The 2014 MICS survey collected data from 10,018 households and 9,827 women. As the main purpose of this study is to investigate the association between sex composition of children and women's fertility desire, we restricted our analysis to women with at least one child. This produced a sample of 5,605 women with at least one child.

We estimate separate multivariate logistic regression models according to women's number of current children (one child, two-children, and three or more children) to examine the relationship between sex composition of current children and women's fertility desire, controlling for confounding factors. The reason for separate regressions for women with one child, two children, and three or more children, respectively, is that Vietnam applied "two-child policy", which is a special policy for controlling national fertility, as discussed earlier. Therefore, our aim is to explore, and compare the differences in fertility desire among the group with one child, the group with two children, and the group with three or more children (those who dared to overcome the barrier of the two-child policy).

The key outcome of our research is fertility desire. Fertility desire is defined as the desire to have another child in the future of women aged 15-49 years at the time of interview based on the question "I would like to ask some questions about the future. Would you like to have (a/another) child, or would you prefer not to have any more children?" Women who responded negatively were chosen as our reference group (no more=0, have another child=1).

Sex composition of living children is the main independent variable. We stratified the sample into three groups based on their number of current children:

- *Group 1:* women with one child and sex composition defined as: (i) one son (ii) one daughter.
- *Group 2:* women with two children and sex composition of the children defined as: (i) two sons (ii) one son and one daughter (iii) two daughters.
- *Group 3:* women with three or more children and sex composition of the children defined as: (i) all sons (ii) mix gender (iii) all daughters.

There are three groups of control variables in our study: (i) Demographic and personal characteristics (women's age, women's age at first marriage, women's age at last child's birth, age of youngest child, experience of death of child, having older persons in household, and living with a male partner), (ii) Economic factors (work status, level of education, household wealth index, place of residence, economic

region), (iii) Social indicators (sex ratio at birth at the provincial level, religion, attitudes towards domestic violence, and access to mass media).

SRB, which is used as a proxy for social norms at the provincial level, is taken from Mid-term Population and Housing Survey conducted in April each year by the Vietnam General Statistical Office. We constructed the average sex ratio at birth for the five years before 2014 MICS survey. Given the Vietnamese context, we believe that the five-year average SRB is a better proxy for social norms compared to the SRB for one year because any given year may be biased if it was a "bad year" for childbearing in Vietnamese beliefs.

**Ethical Considerations:** This research uses secondary dataset, namely the Multiple Indicator Cluster Surveys (MICS) data set collected in Vietnam in 2014 under United Nations Children's Fund (UNICEF) support, which is a nationally representative dataset of Vietnamese child and women. MICS also passed Vietnam National Ethical Committee before conduct survey. The MICS researcher completely ensured that all participants and their official representatives were clearly explained the objectives and contents of the research. The respondents had the right to stop or interrupt the interview at any time without any penalty. All personal information provided by the survey is confidential and only for research purposes.

## Results

The majority of Vietnamese women have only sons followed by those with the same number of sons and daughters (Table 1).

**Table 1:** Sex composition of children among Vietnamese women of childbearing age

Sex composition of children	Sample (%)	Population (%)
All sons	31.73	31.62
Son(s) = Daughter(s)	28.41	28.27
All daughters	25.56	26.32
Daughter(s) > Son(s)**	8.52	7.82
Son(s) > Daughter(s)*	5.78	5.97
Total	100.00	100.00

Note: Sample (%) statistics are calculated from un-weighted data. Population (%) statistics are calculated from weighted data.

\* Number of sons is more than number of daughter(s) and having at least one daughter.

\*\* Number of daughters is more than number of son(s) and having at least one son.

Table 2 shows fertility desire of women based on the number of children and sex composition of

children. For women with one child, 65% of those with one son and 73% of those with one daughter would like to have additional children. For women with two children, 13.1% of those with two daughters would like to have additional children, while only 4.6% of those with two sons and 4.3% of those with one son and one daughter would like to have more children. In the group of women with three or more children, 12.7% of those with three daughters would like to have additional children. The corresponding figures for those with three sons and those with mix gender composition of children are 2.9% and 0.7%, respectively. Overall, given the same number of children, a larger percentage of those without sons would like to have additional children.

Table 3 shows the results of our multivariate logistic regression models. For all groups, women without sons showed higher odds of wanting another child relative to those with at least one son. Specifically, as column (1) showed, for women with one child, those with one daughter have almost 1.5

times the odds of those with one son to desire more children.

**Table 2:** Fertility desire, current number, and sex-composition of children

Characteristics of women	Fertility desire		
	No (%)	Yes (%)	p-value*
Women with one child			0.001
1 son	34.99	65.01	
1 daughter	26.92	73.08	
Total	31.36	68.64	
Women with two children			<0.0001
Two sons	95.38	4.62	
Two daughters	86.86	13.14	
One son, one daughter	95.66	4.34	
Total	93.83	6.17	
Women with three or more children			<0.0001
All sons	97.06	2.94	
All daughters	87.35	12.65	
Mix gender	99.31	0.69	
Total	97.36	2.64	

\*P-values from Chi-squared tests are reported.

**Table 3:** Logistic regressions of women's fertility desire according to the number of current children

	One Child	Two Children	Three Children
	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)
	(1)	(2)	(3)
Group 1: Women with one child (Ref. one son)			0.001
One daughter	1.468** (0.212)	-	-
Group 2: Women with two children (Ref. two sons)			
Two daughters		3.851*** (0.864)	-
One son and one daughter		1.072 (0.233)	-
Group 3: Women with three or more children (Ref. All sons)			
All daughters	-	-	9.792** (10.39)
Mix gender	-	-	0.160* (0.151)
Sex ratio at birth at provincial level	1.03 (0.0201)	0.993 (0.0171)	1.088* (0.0497)
Age of mother	0.900* (0.0653)	0.833*** (0.0554)	0.968 (0.179)
Age at first marriage	1.086** (0.0454)	1.077* (0.0445)	0.874 (0.0851)
Age group of mothers at last birth (Ref. 15-20)			
20-24	1.062 (0.345)	8.836* (10.05)	-
25-29	0.796 (0.407)	12.30** (15.06)	0.884 (1.108)
30-34	0.405 (0.306)	6.399 (8.77)	0.320 (0.617)
35-39	0.196 (0.202)	5.119 (8.399)	0.303 (0.874)
40 and older	0.118 (0.168)	-	-

**Table 3:** Logistic regressions of women's fertility desire according to the number of current children (continue)

	One Child	Two Children	Three Children
	O.R. (S.E.) (1)	O.R. (S.E.) (2)	O.R. (S.E.) (3)
Living with a male partner (Ref. Not living with a male partner)	11.11***	4.370**	-
Husband-wife gender equality attitude (Ref. Unacceptance of violence)	1.155 (0.17)	0.586*** (0.104)	0.339** (0.182)
Education (Ref: Primary)			
Lower secondary	1.207 (0.27)	1.172 (0.299)	1.170 (0.697)
Upper secondary	1.299 (0.322)	1.333 (0.412)	-
Vocational school	1.486 (0.523)	0.765 (0.388)	-
College/university & above	1.746* (0.522)	1.25 (0.504)	-
Religion (Ref. No religion)			
Buddhism	0.690* (0.139)	0.645 (0.227)	1.143 (1.039)
Christianity	1.171 (0.31)	3.051*** (0.854)	3.598 (3.112)
Other religions	0.485** (0.175)	1.655 (0.855)	31.05** (53.15)
Region (Ref. South East)			
Red River Delta	1.272 (0.357)	2.443*** (0.817)	2.633 (3.346)
Northern midlands and mountain area	1.689** (0.431)	1.378* (0.465)	3.634 (5.386)
North Central and central coastal area	1.332 (0.339)	1.820* (0.598)	4.646 (6.163)
Central Highlands	1.439 (0.358)	1.068 (0.36)	1.682 (1.687)
Mekong River Delta	1.058 (0.229)	0.627 (0.254)	- -
Wealth index (Ref. poorest)			
Second	1.286 (0.324)	1.545 (0.465)	0.419 (0.358)
Middle	1.523 (0.395)	1.694* (0.512)	0.325 (0.242)
Fourth	0.991 (0.256)	0.853 (0.297)	1.431 (1.399)
Richest	1.211 (0.367)	1.354 (0.538)	1.172 (1.496)
Number of observations	1,502	2,920	779
Pseudo R-square	0.300	0.210	0.389

Note: Certain cells are left blank as some of the control variables were dropped automatically as they predict success or failure completely or there was no observation corresponding to the variable.

Standard errors in parentheses. Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . All models control for mass media access, urban/rural, working status, having elderly in the household, having experience of death of child, and age of youngest child.

For women with two children, those with two daughters have 3.85 times the odds of those with two sons to want additional children (column (2)). For women with three or more children, as column (3) showed, those with all daughters have 9.79 times the odds of those with all sons to want another child.

Preference for mix gender of children is evident in the case of women with three or more children. As column (3) shows, among women with three or more children, those who already have both son(s) and daughter(s) show lower odds of fertility desire compared with those with all sons (OR=0.16).

Therefore, together with son preference, mix gender preference is also observed among women with three or more children in the context of contemporary Vietnam.

Next, we consider the role of sex ratio at birth in explaining women's fertility desire. As column (3) shows, for women with three or more children, those who live in provinces with higher SRB have higher odds of wanting another child. For women with one child, and women with two children, however, the relationship between provincial SRB and fertility desire is not statistically significant.

Our multivariate results also showed that there were statistically significant associations between most control variables and women's fertility desire but with distinct patterns according to the number of current children. Among women with one child and women with two children, women's age at first marriage was positively associated with women's fertility desire, while women's age was inversely associated with fertility desire.

For women with two children, those who were 20-24, and 25-29, when their last child was born, had higher fertility desire compared to those who were 15-19 when their last child was born. Notably, as column (1) showed, for women with one child, educational attainment was positively associated with fertility desire in the case of university education and above.

As columns (1) and (2) showed, for women with one child and women with two children, those who lived with a male partner at the time interview showed higher odds of fertility desire relative to those who did not live with a male partner. Moreover, gender norms regarding power relations within partnership, as measured by women's attitudes toward domestic violence; showed a strong relationship with women's desire for additional children in the case of women with two children. Women who agreed with violence from their husbands showed lower odds of fertility desire relative to those who did not agree with domestic violence. It appeared that in Vietnam, more empowered women had higher fertility desire.

In addition, socio-economic variables were found to be correlated with fertility desire. For religion, among those with one child, Buddhists and those reporting other religions had lower fertility desire compared to those who reported having no religion. Nevertheless, among those with two children, Christian women had 3.05 times the odds of those who reported having no religion to desire additional children. Women's fertility desires was also variable according to the broader regional context in which they live. Among women with one child, those in the Northern midlands and mountain area showed higher odds of fertility desire (OR=1.69) relative to those living in the South East. Among women with two children, those in the Red River Delta, Northern midlands and mountain area, North Central and central coastal area were more likely want additional children compared to those in the South East.

## **Discussion**

This study addresses a major gap in our current knowledge of fertility in Vietnam by investigating whether sex composition of current children, and provincial-level sex ratio at birth, are associated with women's fertility desire. Our first key finding is that sex composition of children has a strong and significant association with women's fertility desire, controlling for other factors. Regardless of the number of current children, having all daughters is associated with higher fertility desire compared to having all sons. The findings suggest that traditional cultural norms of son preference prevail in Vietnam. The results are consistent with studies in East and South Asian countries that are also characterized by son preference, namely China (25-27), South Korea (28-30) and India (14). Due to strong son preference, women's value is underestimated compared to men both in the family and in society (31). This is possibly reinforced by Vietnam's ageing population and weak state support for the older population, who are disproportionately female (32). Support from children, particularly sons, are the main source of support for older people in Vietnam which further increases the importance of sons for women.

Our second key finding is that Vietnam not only has son preference but also mix-gender preference. For the group of women with three or more children, those with both son(s) and daughter(s) have lower fertility desire compared to those with all sons. This result is consistent with findings in Western countries or some parts of India, as discussed earlier (15, 16).

The third key finding is that provincial-level SRB, which represents localized gender norms, plays an important role in women's fertility desire but only among those with three or more children. This is possibly due to Vietnam's one-or-two child policy. It is possible that women with one or two children adhered to the one-or-two child policy; therefore, regardless of the social norms in their community, they may not be willing to risk breaking the law. In contrast, women with three or more children may have a more relaxed attitude towards the law or live in communities where the law is not strictly enforced. Further analysis, not shown, indicates that women with three or more children are disproportionately resident in the Northern midlands and mountain area, which may have had a more relaxed enforcement of the policy. They also have a higher proportion in the rural area, and a much lower proportion with degrees

from professional school and college/university, which could partly explain why they are more likely to be influenced by localized social norms.

Our study is not without limitations. One is the lack of certain variables which could add to our assessment of fertility desire, such as men's fertility desire, party membership, and government cadres (as the one-or-two child policy applies mostly to government cadres and communist party members). We also do not have information regarding internal migration, which affects our assumptions regarding localized social norms because a woman's current residence may not be the place where she spent most of the time in her life. These limitations provide directions for future research.

Despite these limitations, our study shows that son preference is important to Vietnamese women's fertility desire, and likely their reproductive behavior, as women may use available reproductive health technologies to pre-determine the gender of their children. We suggest that the government should institute and enforce policies to ban ultrasounds to detect fetal sex to reduce the feasibility of sex selective abortion. The government should also utilize mass media and other social outlets to enhance women's value to society, as well as create conditions which enable women to promote their roles in the family and society. These ideological shifts can lead to improved gender equality.

## Conclusion

Our study shows that son preference is important to Vietnamese women's fertility desire, and likely their reproductive behavior, as women may use available reproductive health technologies to pre-determine the gender of their children.

## Conflict of Interests

Authors have no conflict of interests.

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