# THE GAP BETWEEN DESIRED AND ACHIEVED FERTILITY IN KANCHANABURI DEMOGRAPHIC SURVEILLANCE SYSTEM

Tran Quang Lam, PhD

## INTRODUCTION

The relationship between desired and achieved fertility has been paid attention by various researchers when studying fertility since information on the two indicators are often obtained in demographic and health surveys. Though the information is collected by simple and clear questions, the relationship between desired and actual fertility is quite complex. Usually a woman is asked about her desired number of children meaning future fertility and it will happen within few years or more in the future. However, whether this intention translates into actual fertility still depends on various factors from the individual ones to the changes of environment where she and her family live.

There are various factors affecting the gap between desired and achieved fertility. They can be demographic factors i.e. age, marital status, duration of union, number of living children, etc. and socio-economic factors i.e. employment status, income, education, residence, policies, etc. as well as contextual factors. The factors are also different by countries. Findings from a survey in France (Toulenon L & Testa M, 2005) reveal that marital status of cohabiting and married makes no difference between desired and actual fertility. The gap among couples having two living children is less than the one among having none or only one child. Other socio-economic factors are also found to have impact on the gap including employment, income and educational level.

Lant Prichett (1994) also mentions about the impact of social, educational, economic and cultural environment to affect their desired and actual fertility.

Another study in Kuwait (Shah, M & Nathanson, A, 2004) also shows that perceived value of children, large family value and cost of raising children are important factors for the gap between desired and actual fertility.

Parent's education, number of living daughters and region of residence are also found to have important impact on desired and actual fertility of couples in Egypt (Boraie MS, MacCarthy J & Oruch MR, 1988).

In a study in Australia (Bracher M & Santow G, 1991), findings show that age at marriage and family tradition also have effect on fertility desires and fertility outcomes.

This study aims to examine situation, characteristics and possible factors affecting the gap between desired and achieved fertility among 15-49 married women in Kanchanaburi Demographic Surveillance System (KDSS), Thailand. Study findings will contribute to better understanding of possible impact on fertility of various factors i.e. socio-economic and demographic as well as from different levels i.e. individual, household and village. The knowledge would policy-makers to have right and effective decisions to develop proper policies as well as contribute to the greater effectiveness of existing policies.

## DATA SOURCE AND METHODOLOGY

This study uses data from the Kanchanaburi Demographic Surveillance System (KDSS). The Kanchanaburi project is a demographic surveillance to monitor changes in demographic, socio-economic and health status characteristics of the population in the field site. The project is conducted in selected areas of Kanchanaburi province, Thailand by the Institute for Population and Social Research (IPSR), Mahidol University and supported by the Wellcome Trust, United Kingdom. The sample size for this study includes 1,436 married women aged 15-49 years and have at least one child.

The fertility gap is calculated from information on number of the total living children and the ideal number of children according to their opinion. The fertility gap is also separated for boys and girls.

The differences in fertility gaps by some demographic and socio-economic characteristics using descriptive analysis.

Then, multivariate analysis is applied to identify possible factors affecting the fertility gaps in KDSS for the total children and for boys and girls separately. The effects of independent variables are examined at different levels i.e. individual, household and village.

The first set of independent variables includes individual social and demographic factors such as age, residence, education, ethnicity, number of living children, working status, nature of work, income, migration experience and membership of a social group or club.

Four household variables are considered in the second set. They are number of persons in household, house index, house characteristics index and household asset index. Principle Component Method is used to construct house index, house characteristics index and household asset index. House index is constructed from type of house (single, twin-house, block/shop house, etc.), material of the roof (cepack, tile, zinc plate, etc.) and material of the house walls (concrete, brick, tile, zinc, bamboo, etc.). House characteristics index is constructed form living conditions of the household such as electricity, fuel for daily life, water, drinking water and water for household use. And household asset index is constructed from a list of items in the household (television, telephone, computer, air conditioner, washing machine, etc.).

The third set covers two village-level variables i.e. percentage of land area for agricultural use and village infrastructure index. Village infrastructure index is constructed from list of infrastructure and transportation (public telephone, broadcasting tower, radios, internet, type of main road for travel within village and to the district) by the principal component method.

## RESULTS AND DISCUSSION

Socio-economic and demographic characteristics of married women in the study are presented in table 1.

Table 1 here.

Women in the age-groups of 25-29 and 30-34 accounts for 45 percent of the total. The proportions in the younger or older age-groups are much lower.

KDSS area is divided into 5 types of residence according to major economic activities and geographic characteristics. They are urban/semi-urban, rice field, plantation, uplands and mixed economy, Among 1,436 married women of the study sample, about one-third live in the urban/semi-urban and nearly one-four live in the mixed economy area.

Educational level of married women in KDSS is quite low since more than 55.6 percent of them only completed elementary education. About one-fourth finished secondary education while less than 16 percent are able to accomplish higher level of education.

Three-fourths of women were working at the time of survey. Very few (0.5 percent) did not work and 22.8 percent were still in schools or doing housework.

Graph 1 here.

Information on number of living children is presented in graph 1. Since fertility is already low in KDSS, mean number of living children for women in the study sample is only 1.65 children per woman. Majority of women have only 1 or 2 children (49.9 and 37.3 percent respectively). Eleven percent have 3 children while only few have more (1.5 percent for 4 children and 0.3 percent for 5 children).

Regarding sex of living children, in average a woman has 0.85 living boy and 0.8 living girl – an equal number between sex. More than two-thirds of married women have at least one boy i.e. 51.1 percent having 1, 14.3 percent having 2 and 1.9 percent having 3 sons. About one-third have only daughters. In the other side, 38.4 percent have no son. Nearly half of the women (46.4 percent) have one daughter, 12.9 percent have 2 and 2.3 percent have 3 or more. It can be seen that the distribution of living children is somewhat similar pattern between son and daughter. In general, 71 percent have only sons or daughters.

Graph 2 here.

Graph 2 shows information on ideal number of children expected by women. In general, a woman wants about 2.22 children. This figure is 0.57 child higher than the actual one. This difference is actually found in most of the DHS in other countries. Two-thirds of the surveyed women state that they want to have 2 children, followed by those expecting 3 children (18.6 percent) and 1 child (9.5 percent). Only 5 percent of women want to have 4 or more children. The result shows a common norm of 2 children per couple to be dominant in Thailand in general and KDSS in particular.

Regarding sex of desired children, average number of desired boy is slightly lower than that of girl (1.1 comparing to 1.13 children). The percentage distribution of expectation is similar for boy and girl. There is only 14.8 percent of women say they do not want neither a son (7.6 percent) or a daughter (7.2 percent). Majority of women desires to have a son (76.5 percent) while the figure for a daughter is 75.4 percent.

When examining the difference between desired and achieved number of children, it is found that only 40.2 percent of women said that they had the same number of their living children and the desired number; 8 percent had the living number more than the ideal one; and 52 percent had the living one less than the ideal one as shown in the graph 3.

Graph 3 here.

The fertility gaps are different for boys and girls. For boys, 56 percent said that they had the same number of their living children and the desired number; 11 percent had the living number more than the ideal one; and 33 percent had the living one less than the ideal one. For girls, 49 percent said that they had the same number of their living children and the desired number; 9 percent had the living number more than the ideal one; and 42 percent had the living one less than the ideal one. It can be seen that not like in many other Asian countries where son preference is quite strong, Thai culture makes a considerable difference. Though fertility is low, there is still a higher percentage of women say that they want more daughter than the one for son (42 percent comparing to 33 percent).

When looking in more detail of the survey data, apart from 40.2 percent of women have the same number of living and ideal children, 41.1 percent say they need one more child and 11 percent saying to need 2 or more children. In contrast, 8 percent say they have given births more than the one they want.

The patterns are similar for both boy and girl. 29 percent want one more boy while the figure is 36 percent for one more girl. Only small proportion want 2 more boys or girls (3.7 percent and 4.9 percent respectively). In the other side, more than 11 percent say they have had more sons than expected. The figure is slightly lower for girl (9.4 percent).

**Gap between desired and actual fertility by some socio-economic characteristics**

It is expected that fertility gap varies by socio-economic characteristics of married women. Information is presented in table 2.

<span style="color:red">Table 2 here.</span>

When examining the fertility gap by some socio-economic characteristics, it is found that almost half of the married women living in urban/semi-urban have the same number of desired and living children – nearly 10 – 20 –percent higher than the other four areas. It seems that women in this area have clear fertility intention and achieved it. In the other side, women in urban/semi-urban also have lowest proportion of wanting more children (42.7 percent) comparing to that of women in other areas i.e. mixed economy, rice field, plantation and uplands with 51, 57, 62 and 59 percent respectively. Low fertility in KDSS also expresses in a proportion of less than 10 percent of women in all areas desire less children than the actual ones.

By age groups, a high proportion of women in young ages (15-29) i.e. 60-70 percent wanted to have more children than their living ones. This is explainable since they are still in the early reproductive period. The proportion reduced to about 40 percent among middle ages (30-39). However, it was a surprise to find that two-thirds of women aged 45-49 still said that they wanted more children than the living ones.

By education, illiterate women are more likely to want more children than their living ones. This is correspondent to common results that low education women tend to have higher fertility. The result also shows more than 51 percent of women with higher secondary education saying to want more children than the actual ones. This can be explained by the fact that many of them with this education are in young ages so that they still want to give more birth.

Thai women also have less children than non-Thai (52 percent compared to 78 percent).

Fertility gap also varies by work status. About 40 percent of working women say they have achieved their fertility while the figure is only 28.6 for women not working. As a consequence, women who do not work are likely to want more children (57 percent) compared to the those working (51 percent) and others (53 percent).

Due to Thai culture, son preference is not an serious issue as in many other Asian countries. In Thailand, girl children are even expected more by their parents. Fifty-six percent of women say they have the same desired number of boys to the living ones, while the figure is only 49 percent for girls. Only 33 percent of women say they want more boys while 41 percent say the same for girls.

Percentages of women want to have more girls are also higher in all strata (38 to 46 percent) compared to those want to have more boys (27 to 40 percent). Similar pattern is observed when looking by age groups.

Regarding education, women with higher education are likely to want less boys i.e. percentages range from 49 percent for illiterate to 25 percent for higher than secondary. In contrast, the figures for wanting more girls are somewhat similar among different groups of education (around 40 percent).

Non-Thai women want more boys than Thai ones (62 percent compared to 32 percent) while Thai women want more girls (41 percent compared to 37 percent). The working women are likely to want more girls than boys (40 percent compared to 33 percent) while it is contrasted among those not working i.e. 20 percent compared to 40 percent.

Thus, the data reveal that in the context of low fertility in Thailand in general and in KDSS in particular, achieved fertility is lower than the desired one. The pattern is the same for total children as well as for boys and girls separately. The picture is quite different and contrasted to the situation in many other countries.


**Multivariate analysis**

Results of examining impact of various factors on fertility gap are presented in table 3. Multinomial regression is used to compare the odd ratio between having ideal number of children lower the living one or higher the living one (i.e. there is a fertility gap) and the same number of ideal and living children (i.e. there is no gap). Only factors having significant impact are presented.

Table 3 here.

Among individual social and demographic factors, age groups, education, number of living children and member of social club showed highly statistically significant impact on fertility gap. The odd of wanting less ideal number of children was 44 percent smaller for those having secondary education. For those wanting more ideal number of children, the odd is 35 percent larger.

Each additional living child increases the odd of wanting less ideal number of children 14 times while decreases the odd of wanting higher ideal number of children by 93 percent.

Younger age groups are more likely to have higher number of ideal children than the living one. Not joining any social group or club has the odd of wanting more children by 10 percent.

Household index show a diverse impact on fertility gap. While the index increases the odd of wanting less children by 20 percent, it decrease the odd of wanting more children by 11 percent. House index also increases the odd of wanting more children by 16 percent.

Percentage of agricultural land use in the village increases the odd of wanting more children by 14 percent.

Factors affecting fertility gap of boys and girls are somewhat different. For those having ideal number of children less than the living one, there are two factors for boy fertility gap i.e. number of living children and having secondary education while they are three identified factors for girl fertility gap i.e. number of living children, having secondary education and doing trade or commerce work.

The differences are also found for those having ideal number of children higher than the living one. There are three factors affecting boy fertility gap i.e. number of living children, being illiterate or not and house index. In contrast, there are more factors affecting girl fertility gap i.e. number of living children, age groups, being member of a social group or club and house characteristics index.

## Acknowledgement

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**APPENDIX: TABLES AND GRAPHS**

**Table 1. Socio-economic characteristics of studied sample (percentage)**

| Characteristic | Percent | | Characteristic | Percent |
|---|---|---|---|---|
| **Residence** | | | **Age-group** | |
| Urban/semi-urban | 32.3 | | 15-19 | 3.3 |
| Rice field | 15.5 | | 20-24 | 14.3 |
| Plantation | 13.9 | | 25-29 | 22.9 |
| Uplands | 15.9 | | 30-34 | 22.3 |
| Mixed economy | 22.3 | | 35-39 | 16.6 |
| | | | 40-44 | 13.6 |
| **Educational level** | | | 45-49 | 7.0 |
| Illiterate | 3.0 | | **Work status** | |
| Elementary | 55.6 | | Working | 76.7 |
| Secondary | 25.6 | | Others | 22.8 |
| Higher than secondary | 15.8 | | Not working | 0.5 |

**Table 2. Percentage distribution of gap between desired and actual fertility by socio-economic characteristics**

| Characteristic | Difference between desired and living children (total) | | | Difference between desired and actual boy | | | Difference between desired and actual girl | | |
|---|---|---|---|---|---|---|---|---|---|
| | Less | Same | More | Less | Same | More | Less | Same | More |
| **Age-group** | | | | | | | | | |
| 15-19 | - | 31.9 | 68.1 | 2.4 | 59.5 | 38.1 | 7.1 | 50.0 | 42.9 |
| 20-24 | 1.5 | 26.7 | 71.8 | 3.9 | 54.1 | 42.0 | 4.4 | 48.6 | 47.0 |
| 25-29 | 5.8 | 35.9 | 58.4 | 13.2 | 54.5 | 32.3 | 6.9 | 47.6 | 45.5 |
| 30-34 | 10.0 | 52.2 | 37.8 | 12.5 | 60.1 | 27.5 | 13.2 | 56.0 | 30.8 |
| 35-39 | 13.0 | 46.9 | 40.2 | 13.3 | 59.6 | 27.1 | 13.8 | 52.1 | 34.0 |
| 40-44 | 12.3 | 40.5 | 47.2 | 14.3 | 57.8 | 27.9 | 8.4 | 43.5 | 48.1 |
| 45-49 | 5.0 | 31.0 | 64.0 | 12.7 | 38.0 | 49.4 | 8.9 | 39.2 | 51.9 |
| **Residence** | | | | | | | | | |
| Urban/semi-urban | 8.8 | 48.5 | 42.7 | 12.3 | 61.0 | 26.7 | 10.3 | 51.8 | 37.9 |
| Rice field | 5.8 | 37.7 | 56.5 | 9.6 | 60.4 | 29.9 | 6.4 | 52.9 | 40.6 |
| Plantation | 7.5 | 30.5 | 62.0 | 9.6 | 51.9 | 38.5 | 9.1 | 45.5 | 45.5 |
| Uplands | 7.0 | 34.5 | 58.5 | 13.5 | 46.4 | 40.1 | 8.2 | 45.9 | 45.9 |
| Mixed economy | 9.1 | 40.0 | 50.9 | 10.9 | 56.6 | 32.5 | 11.3 | 49.1 | 39.6 |
| **Educational level** | | | | | | | | | |
| Illiterate | 17.9 | 25.6 | 56.4 | 15.2 | 36.4 | 48.5 | 15.2 | 42.4 | 42.4 |
| Elementary | 8.0 | 39.8 | 52.2 | 12.4 | 54.8 | 32.9 | 9.2 | 48.9 | 41.9 |
| Secondary | 9.1 | 44.4 | 46.5 | 7.5 | 62.3 | 30.2 | 12.1 | 51.3 | 36.6 |
| Higher than secondary | 5.4 | 43.3 | 51.2 | 12.3 | 62.3 | 25.3 | 6.5 | 50.0 | 43.5 |
| **Work status** | | | | | | | | | |
| Working | 8.3 | 40.2 | 51.5 | 10.9 | 55.8 | 33.3 | 9.7 | 49.8 | 40.4 |
| Others | 6.7 | 40.4 | 52.9 | 13.1 | 56.7 | 30.2 | 8.4 | 47.3 | 44.4 |
| Not working | 14.3 | 28.6 | 57.1 | - | 60.0 | 40.0 | - | 80.0 | 20.0 |

**Table 3. Factors affecting gap between desired and actual fertility in KDSS**

| Variables | Total | Boys | Girls |
|---|---|---|---|
| | Exp(B) | Exp(B) | Exp(B) |
| **Having ideal number of children lower the living one Reference category: the same number (no gap)** | | | |
| **Individual socio-demographic factors** | | | |
| Number of living children | 14.4*** | 2.9*** | 3.8*** |
| Education | | | |
| *Others (ref.)* | | | |
| *Having secondary education* | 0.56** | 1.9** | 0.59** |
| Work | | | |
| *Others (ref.)* | | | |
| *Trading or commerce work* | | | 2.35** |
| **Household factors** | | | |
| House characteristics index | 1.2** | | 1.13** |
| **Having ideal number of children higher the living one Reference category: the same number (no gap)** | | | |
| **Individual socio-demographic factors** | | | |
| Number of living children | 0.07*** | 0.5*** | 0.45*** |
| Age group | | | |
| *15-19* | 0.16*** | | 0.38** |
| *20-24* | 0.38*** | | 0.54** |
| *25-29* | 0.42*** | | |
| *30-34* | 0.31*** | | 0.49** |
| *35-39* | 0.43** | | 0.59* |
| *40-44* | | | |
| *45-49(ref.)* | | | |
| Education | | | |
| *Others (ref.)* | | | |
| *Being illiterate* | | 0.36** | |
| *Others (ref.)* | | | |
| *Having secondary education* | 1.35* | | |
| Not join any social group/club | 1.1** | | 1.1*** |
| **Household factors** | | | |

| | | | |
|---|---|---|---|
| House index (type, roof, wall) | 1.16* | 1.23*** | |
| House characteristics index | 0.89*** | | 0.95** |
| **Village factors** | | | |
| Log of percentage of land area  for agricultural use in village | 1.14** | | |
| **R square** | **0.587** | **0.183** | **0.219** |

Note:    *** Significant at 0.01 level
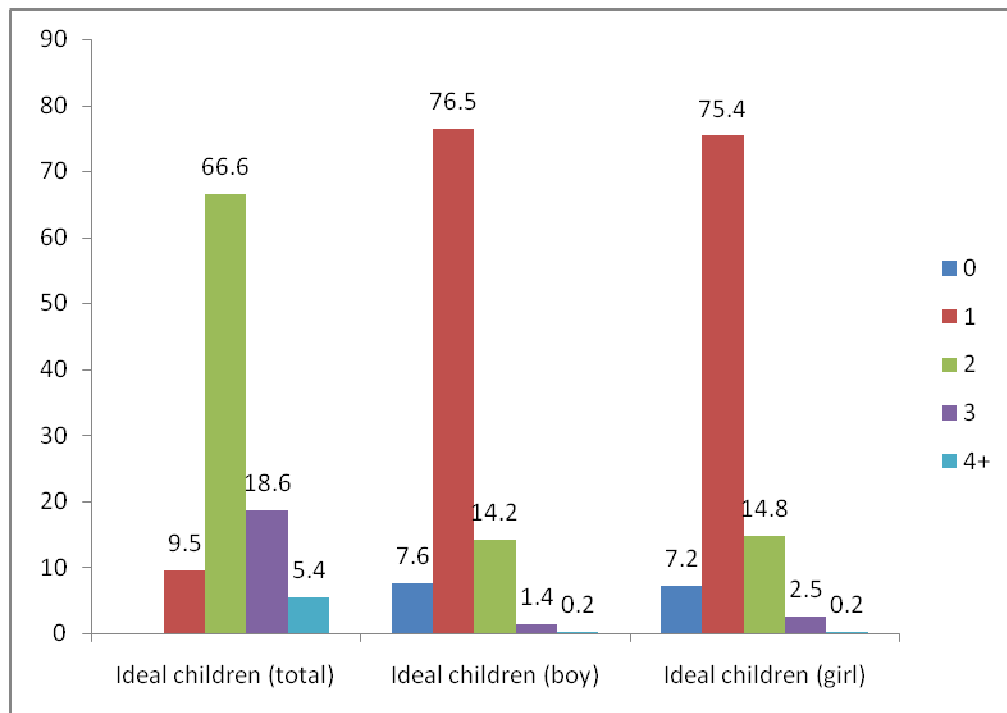
   ** Significant at 0.05 level

   * Significant at 0.1 level

**Graph 1. Percentage distribution of number of living children (total, boy and girl)**
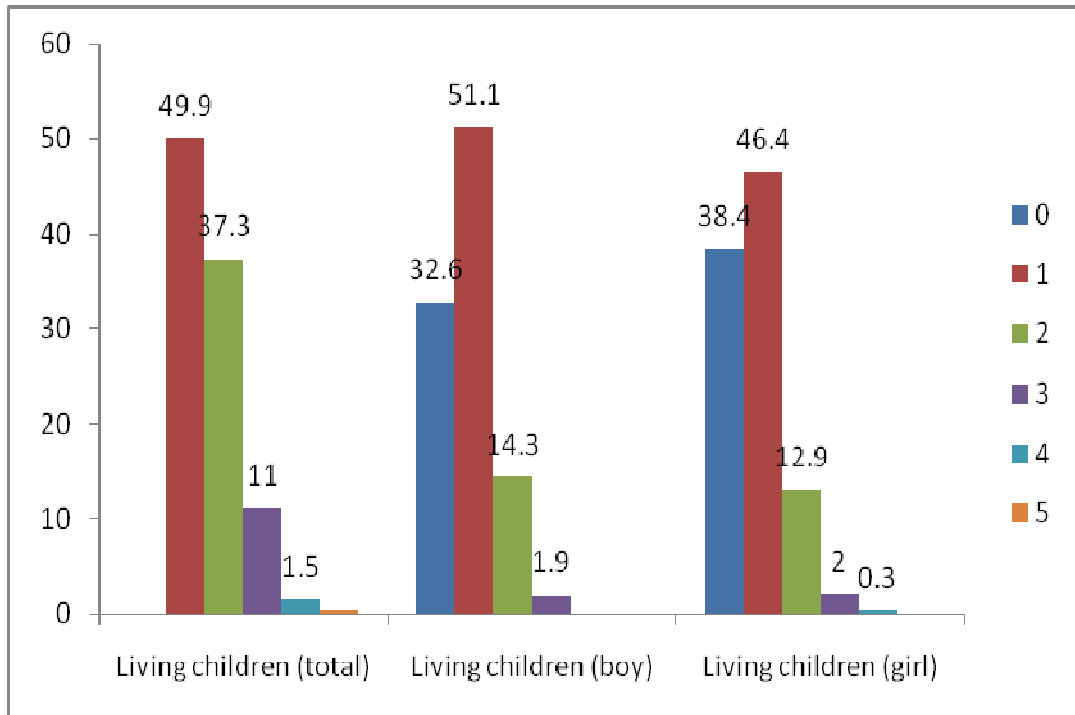


**Graph 2. Percentage distribution of number of ideal children (total, boy and girl)**

**Graph 3. Percentage distribution of difference between number of ideal and living children (total, boy and girl)**