# FERTILITY BEHAVIOUR IN HIMACHAL PRADESH: A CASE STUDY OF DISTRICT BILASPUR

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**Abstract:** The present study has been undertaken to study the fertility behaviour in District Bilaspur of Himachal Pradesh. A total sample comprises 150 households, total numbers of observations for all sampled couples were 164 and dependent variable is total children ever born (TCEB). Step wise forward regression analysis was applied to examine the effect of social, economic and demographic variables on total number of children ever born (TCEB) of the sampled women. The result of stepwise regression shows that total male surviving children were alone responsible for 28 percent of variation in total no. of children ever born. The second step include age of wife at the time of marriage 21 years or more, its partial regression coefficient is (-0.366) negative indicates that higher the age at the time of marriage lower the level of fertility. Third step includes duration of effective marriage 21 years or above, positive sign of regression coefficient (0.314) indicates that fertility is likely to increase with duration of marriage. Fourth step includes wife age at the time of marriage 18 to 20 years, its partial regression coefficient is negative (-0.258). Fifth step includes number of children dead, its partial regression coefficient is (0.179) positive. This indicates higher the mortality higher the fertility level. Sixth step includes wife education above senior secondary school complete, its partial regression coefficient is (-0.141) negative higher the level of education of wife, lower the level of fertility. Seventh step includes duration of effective marriage 16-20 years, its partial regression coefficient is (0.131) positive. Eighth step also includes duration of effective marriage 6-10 years increases the value of $R^2$ to 59 percent. Ninth step includes duration of effective marriage 11-15 years increases the value of $R^2$ to 62 percent. Tenth step includes husband working in private sector increases the value of $R^2$ to 63 percent. Eleventh step includes elders' takes decision about son preferences, its partial regression coefficient is (0.101) positive shows that when elders prefer son over daughter increases the fertility level. Twelfth step includes husband doing business increases the value of $R^2$ to 65 percent.

**Keywords:** Fertility behaviour, regression analysis, total number of children ever born.

## 1. Introduction

Population growth today is primarily the result of a rapid transition from a long historical era characterised by high birth and death rates, to one in which death rates have fallen sharply while birth rates, especially in developing countries, have not yet fallen much more than historic high level. Rapid growth of population is one of the major problems of the developing and the least developed countries of the world. But the problem of population growth is not simply a problem of a numbers; it is problem of human welfare and of development.

The unrestrained population increase is a major source of crisis facing the mankind today. It is claimed to be the principal cause of poverty, low standards of living, malnutrition and ill health. High population growth has some far-reaching consequences too. The employment problem is clearly intensified when population is growing more rapidly. Another significant consequence of population growth is, of course, the increased demand for food. The growth in country's population is more important than the growth in national income in determining the demand for food. The result of the rapid population increase is a locking in of the economy in a low-level equilibrium income. There are also serious environmental consequences of this process, in the form of land degradation, which includes nutrient exhaustion, soil erosion and deforestation.

India is a developing country today and it is facing the population problem of a serious nature. Increasing population, for a long time, has been eating into the gains of economic growth and the consequences of this rapid growth of population are poverty and unemployment. Almost all the developing countries are experiencing demographic transition, at varying peace and levels. In a vast country like India with considerable demographic diversity and heterogeneity and varying level of social economic development among states, the levels and phases of fertility decline vary significantly from one state to another.

The rate of growth of population reflects the difference in the rates of change in birth rates and death rates and migration but migration is not relevant when the world situation is considered. Therefore population growth is the function of fertility and mortality rates. Demographic studies are not merely concerned with human beings but also the social economic factors which have direct or indirect impact on the growth of population, especially fertility trends. Fertility behaviour indicates the actual reproductive performance of a woman, or a group of women. Human fertility is a complex process and is responsible for the biological maintenance of society. A multiplicity of economic, social, cultural and demographic factors is the ultimate determinant of fertility behaviour.

## 2. Methodology

### 2.1 Objective

The present study has been undertaken to study the fertility behaviour in District Bilaspur of Himachal Pradesh.

### 2.2 Sampling design

In order to achieve the objectives of the present study, the primary data has been collected from Himachal Pradesh. A systematic, multi-stage stratified random sampling design has been adopted to collect data. In sampling procedure block, panchayat, village, town, ward and household are the different stages of random sampling. For this purpose, one district i.e. Bilaspur out of twelve districts in Himachal Pradesh have been selected following simple random sampling, while arranging them in ascending order on the basis of their respective population. A total sample comprises 150 households, out of which 75 households (sampled couples 87) were

selected from rural area and 75 households (sampled couples 77) were selected from the urban area in District Bilaspur of Himachal Pradesh.

## 3. Fertility behaviour in Himachal Pradesh

Step wise forward regression analysis was applied to examine the effect of social, economic and demographic variables on total number of children ever born (TCEB) of the sampled women. Age at the time of marriage, duration of marriage, current age of wife, education of husband and wife, occupation of husband and wife, income, male children surviving, type of family, son preference, land, religion and caste have been taken for the purpose of analysis. Age at the time of marriage of woman was classified into three categories age less than 18 years (reference category), 18-20 years and 21 years or more. Duration of effective marriage was classified into five categories up to five years (reference category), 6-10 years, 11-15 years, 16-20 years and 21 years or above. Education of husbands and wife has been classified into four categories, namely illiterate (reference category), education below middle or up to middle school complete, education above middle school to senior secondary school complete and education above senior secondary complete. Occupation of husbands has been classified in to five categories, namely agriculture (reference category), wage work, Government service, private service and business. Occupation of wives has been classified in to five categories, namely agriculture & housewife (reference category), wage work, Government service, private service and business. Decision taken about total no. of children has been classified in to five categories namely, wife (reference category), husband, husband and wife, elders and all family members collectively. Decision about son a preference has been classified in to five categories namely, wife (reference category), husband, husband and wife, elders and all family members collectively.

TCEB = f (MORT, W AGE MAR, DUR MAR, W EDU, H EDU, W OCP, H OCP, NO DEC, SON PRF, TMS)

Explanation of variables included in the regression model:

TCEB = Total number of children ever born

MORT = Number of children dead

W AGE MAR 1 = Age of wife at the time of marriage 18-20 years

W AGE MAR 2 = Age of wife at the time of marriage 21 years or more

DUR MAR 1 = Duration of effective marriage 6-10 years

DUR MAR 2 = Duration of effective marriage 11-15 years

DUR MAR 3 = Duration of effective marriage 16-20 years

DUR MAR 4 = Duration of effective marriage 21 years or above

W EDU 1 = Education of wife below middle or up to middle school complete

W EDU 2 = Education of wife above middle school to senior secondary school complete

W EDU 3 = Education of husband above senior secondary school complete

W OCP 1= Occupation of wife wage work

W OCP 2= Occupation of wife Government service

W OCP 3= Occupation of wife private service

W OCP 4= Occupation of wife business

H OCP 1 = Occupation of husband wage work

H OCP 2 = Occupation of husband Government service

H OCP 3 = Occupation of husband private service

H OCP 4 = Occupation of husband business

NO DEC H = Decision about no. of children taken by husband

NO DEC HW = Decision about no. of children taken by husband and wife

NO DEC E = Decision about no. of children taken by elders

NO DEC A = Decision about no. of children taken by all family members

SON PRF H = Husband takes decision about son preference

SON PRF HW = Husband and wife takes decision about son preference

SON PRF E = Elders takes decision about son preference

SON PRF A = All family members takes decision about son preference

TMS = Total male surviving children

The reference categories for different variables are age less than 18 years for the age at the time of marriage of women, age up to five years for duration of effective marriage, illiterate for education of wives, agriculture for the husband's occupation, agriculture & housewife for the wives occupation, wife takes decision for son preference and wife takes decision about no. of children. Other independent variables considered for mathematical model have been income, religion, education of husband, cast, type of family, land but these variables did not reveal any significant effect on dependent variable. The $R^2$ is called coefficient of multiple regressions and it shows the percentage of the total variation of the dependent variable (TCEB) that is explained by the explanatory variables (i. e. social, economic and demographic variables in our analysis). The value of $R^2$ lies between 0 and 1. Higher the value of $R^2$ the greater the percentage of variation in TCEB explained by the regression and vice versa.

Regression in table 3.1 is for overall sample in both rural as well as in urban area. Total numbers of observations for all sampled couples were 164 and dependent variable is total children ever born (TCEB). The result of stepwise regression shows that total male surviving children were alone responsible for 28 percent of variation in total no. of children ever born. Its partial regression coefficient is (0.525) positive. The second step include age of wife at the time of marriage 21 years or more with respect to reference category (age of wife at the

time of marriage less than 18 years), its addition to regression model increase the value of $R^2$ to 39 percent. Its partial regression coefficient is (-0.366) negative indicates that higher

**Table 3.1 Regression coefficient for sampled couple calculated by applying step-wise forward method**

| Variable | Coefficient | Standard error | Significance | $R^2$ |
|---|---|---|---|---|
| Step 1 | | | | .28 |
| Constant | 1.385 | .113 | .000 | |
| TMS | .525 | .092 | .000 | |
| Step 2 | | | | .39 |
| Constant | 1.848 | .138 | .000 | |
| TMS | .380 | .092 | .000 | |
| W AGE MAR 2 | -.366 | .137 | .000 | |
| Step 3 | | | | .47 |
| Constant | 1.788 | .129 | .000 | |
| TMS | .285 | .090 | .000 | |
| W AGE MAR 2 | -.319 | .129 | .000 | |
| DUR MAR 4 | .314 | .156 | .000 | |
| Step 4 | | | | .50 |
| Constant | 2.217 | .182 | .000 | |
| TMS | .264 | .088 | .000 | |
| W AGE MAR 2 | -.517 | .176 | .000 | |
| DUR MAR 4 | .265 | .156 | .000 | |
| W AGE MAR 1 | -.258 | .161 | .001 | |
| Step 5 | | | | .54 |
| Constant | 2.210 | .177 | .000 | |
| TMS | .264 | .085 | .000 | |
| W AGE MAR 2 | -.512 | .172 | .000 | |
| DUR MAR 4 | .251 | .152 | .000 | |
| W AGE MAR 1 | -.296 | .158 | .000 | |
| MORT | .179 | .244 | .002 | |
| Step 6 | | | | .55 |
| Constant | 2.260 | .176 | .000 | |
| TMS | .249 | .084 | .000 | |
| W AGE MAR 2 | -.465 | .173 | .000 | |
| DUR MAR 4 | .243 | .150 | .000 | |
| W AGE MAR 1 | -.283 | .156 | .000 | |
| MORT | .178 | .240 | .002 | |
| W EDU 3 | -.141 | .138 | .015 | |
| Step 7 | | | | .57 |
| Constant | 2.163 | .178 | .000 | |
| TMS | .238 | .083 | .000 | |
| W AGE MAR 2 | -.433 | .173 | .000 | |
| DUR MAR 4 | .288 | .156 | .000 | |
| W AGE MAR 1 | -.281 | .154 | .000 | |
| MORT | .169 | .238 | .002 | |
| W EDU 3 | -.137 | .136 | .017 | |
| DUR MAR 3 | .131 | .144 | .022 | |
| Step 8 | | | | .59 |
| Constant | 2.083 | .178 | .000 | |
| TMS | .223 | .082 | .000 | |
| W AGE MAR 2 | -.443 | .170 | .000 | |
| DUR MAR 4 | .339 | .161 | .000 | |
| W AGE MAR 1 | -.299 | .152 | .000 | |
| MORT | .182 | .234 | .001 | |
| W EDU 3 | -.154 | .134 | .007 | |
| DUR MAR 3 | .183 | .150 | .002 | |
| DUR MAR 1 | .153 | .139 | .009 | |
| Step 9 | | | | .62 |
| Constant | 1.745 | .197 | .000 | |
| TMS | .135 | .086 | .034 | |
| W AGE MAR 2 | -.370 | .170 | .000 | |
| DUR MAR 4 | .533 | .208 | .000 | |
| W AGE MAR 1 | -.284 | .147 | .000 | |
| MORT | .182 | .226 | .001 | |
| W EDU 3 | -.127 | .131 | .021 | |

| | | | | |
|---|---|---|---|---|
| DUR MAR 3 | .345 | .187 | .000 | |
| DUR MAR 1 | .290 | .164 | .000 | |
| DUR MAR 2 | .266 | .193 | .001 | |
| Step 10 | | | | .63 |
| Constant | 1.660 | .198 | .000 | |
| TMS | .141 | .085 | .025 | |
| W AGE MAR 2 | -.356 | .168 | .000 | |
| DUR MAR 4 | .537 | .206 | .000 | |
| W AGE MAR 1 | -.269 | .145 | .000 | |
| MORT | .181 | .223 | .001 | |
| W EDU 3 | -.136 | .130 | .013 | |
| DUR MAR 3 | .367 | .186 | .000 | |
| DUR MAR 1 | .286 | .162 | .000 | |
| DUR MAR 2 | .264 | .191 | .001 | |
| H OCP 3 | .113 | .138 | .028 | |
| Step 11 | | | | .64 |
| Constant | 1.570 | .201 | .000 | |
| TMS | .137 | .085 | .028 | |
| W AGE MAR 2 | -.334 | .168 | .000 | |
| DUR MAR 4 | .560 | .206 | .000 | |
| W AGE MAR 1 | -.253 | .145 | .001 | |
| MORT | .170 | .222 | .001 | |
| W EDU 3 | -.121 | .130 | .027 | |
| DUR MAR 3 | .375 | .184 | .000 | |
| DUR MAR 1 | .295 | .161 | .000 | |
| DUR MAR 2 | .273 | .189 | .000 | |
| H OCP 3 | .120 | .137 | .019 | |
| SON PRF E | .101 | .175 | .047 | |
| Step 12 | | | | .65 |
| Constant | 1.423 | .210 | .000 | |
| TMS | .144 | .084 | .020 | |
| W AGE MAR 2 | -.314 | .167 | .000 | |
| DUR MAR 4 | .568 | .204 | .000 | |
| W AGE MAR 1 | -.264 | .144 | .000 | |
| MORT | .188 | .223 | .000 | |
| W EDU 3 | -.126 | .128 | .020 | |
| DUR MAR 3 | .380 | .182 | .000 | |
| DUR MAR 1 | .306 | .159 | .000 | |
| DUR MAR 2 | .287 | .188 | .000 | |
| H OCP 3 | .158 | .143 | .003 | |
| SON PRF E | .126 | .177 | .015 | |
| H OCP 4 | .119 | .113 | .029 | |

the age at the time of marriage lower the level of fertility. Third step includes duration of effective marriage 21 years or above with respect to reference category (0 to 5 years). Its inclusion increases the value of $R^2$ to 47 percent. The positive sign of regression coefficient (0.314) indicates that fertility is likely to increase with duration of marriage.

Fourth step includes wife age at the time of marriage 18 to 20 years with respect to reference category (less than 18 years). Its inclusion increases the value of $R^2$ to 50 percent. Its partial regression coefficient is negative (-0.258) indicates that higher the age at the time of marriage lower the age at the time of marriage lower the level of fertility. Fifth step includes number of children dead. Its inclusion increases the value of $R^2$ to 54 percent. Its partial regression coefficient is (0.179) positive. This indicates higher the mortality higher the fertility level. Sixth step includes wife education above senior secondary school complete with respect to reference category increases the value of $R^2$ to 55 percent. Its partial regression coefficient is (-0.141) negative higher the level of education of wife, lower the level of fertility because with higher level of education women become aware of small family benefits, have more knowledge about family planning methods and also increase age at the time

of marriage. Seventh step includes duration of effective marriage 16-20 years with respect to reference category age up to 5 years increases the value of $R^2$ 57 percent. Its partial regression coefficient is (0.131) positive shows that higher the duration of effective marriage higher the level of fertility.

Eighth step also includes duration of effective marriage 6-10 years with respect to reference category age up to 5 years increases the value of $R^2$ to 59 percent. Its partial regression coefficient is (0.153) positive shows that higher the duration of effective marriage higher the level of fertility. Ninth step includes duration of effective marriage 11-15 years with respect to reference category ate up to 5 years increases the value of $R^2$ to 62 percent. Its partial regression coefficient is (0.266) positive shows that higher the duration of effective marriage higher the level of fertility. Tenth step includes husband working in private sector with respect to reference category husband working in agriculture sector increases the value of $R^2$ to 63 percent. Its partial regression coefficient is (0.113) positive shows that husband who were working in private sector have more children. Eleventh step includes elders' takes decision about son preferences with respect to reference category wife takes decision for son preferences increase the value of $R^2$ to 64 percent. Its partial regression coefficient is (0.101) positive shows that when elders prefer son over daughter increases the fertility level. Twelfth step includes husband doing business with respect to reference category husband working in agriculture sector increases the value of $R^2$ to 65 percent. Its partial regression coefficient is (0.119) positive shows that husband who were doing business have more children.

## 4. Policy Implications

The results suggest, among others, that advancement in female education increases age at marriage and lead to fertility decreases. It is recommended that the level of women's education be raised so that they may play a more active and effective role in family planning. Excess female child mortality will decline with the widespread availability of family planning and health services, and through women's development and income generation programme. Evidence shows that when women's status is improved or enhanced there is a reduction in fertility, maternal and infant mortality, and female infanticide.



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