

A Demographic Profile of the People of Jammu and Kashmir

6. REGRESSION ANALYSES

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In the previous chapters, it is evident that a variety of independent determinants - economics socio-cultural, psychological, behavioural, environmental ones may be influencing the population components, viz. fertility and infant and child mortality. In this chapter, an attempt has been made to study the interplay in detail through multiple regression analysis.

MATERIAL AND METHODS

It is already detailed in chapter on population structure. The multiple regression analyses (using the stepwise selection procedure) have been employed separately for the four study population groups, and for the Ladakh (Pooled) group (total population-sample) as well as for the three Muslim population groups pooled together. These analyses have been done to : (i) explore the existence of a linear relationship between a dependent variable and a set of independent variables; (ii) assess the proportion of the variation in the dependent variable that is explained by the independent variables simultaneously; (iii) assign relative importance to each independent variable (among those included in the equation) in predicting the dependent variable; and (iv) study the nature of the impact of each significant independent variable on the dependent variable.

The multiple regression analyses (using the step-wise selection procedure) have been done for 4 dependent variables with a selected set of independent demographic, economic, socio-cultural, biological, physical environmental variables as well as those related to behaviour attitude towards family size and structure.

- (1) For the dependent variable - number of children ever born per ever-married woman, the independent variables used are: age of woman, number of foetal deaths experienced by woman, number of infant deaths experienced by woman, economic characteristics of woman and husband, (household) annual income, (household) ownership of land,

educational characteristics of woman and husband, age at marriage of woman, religion, family structure, (offspring) gender preference, ideal number of children desired, age at menarche, places of residence, communication facilities index, type of medical facilities availed, housing condition index, usage of family planning methods.

- (2) For the dependent variable - number of children surviving per ever-married woman, all these independent variables, excepting three, namely, numbers of foetal, infant deaths experienced by woman, and age at menarche have been utilised.
- (3) For the dependent variable - number of child (offspring) loss per woman, the same set of independent variables as in (2) have been used, and also the number of children ever born per woman.
- (4) For the dependent variable - usage of family planning methods, the same set of independent variables as in (3) have been utilized. But, instead of number of children ever born, number of surviving children per woman has been used. [The analyses for this particular dependent variable has been done for the 'currently' married woman aged 15-44 years].

RESULTS AND DISCUSSION

The results of the multiple regression analyses for the four dependent variables have been displayed in tables 1-5. These tables show such equation statistics as, coefficient of multiple correlation - MR, coefficient of multiple determination - R^2 , standard error--SE, F statistics - F (Eqn), and the significance level of F (Sig F [Eqn]). Apart from these, the statistics for independent variables like, partial regression coefficient - b, standard error of b (SE b), standardized regression coefficient - Beta, F value for b (F), and the significance level of F (Sig F) have also been presented. It may be mentioned here that the multiple regression procedure in the SPSS

package (utilized in the present study) provides (simple) correlation matrices prior to the regression analysis.

Correlation (Simple)

The independent variables which are having significant correlation ($p < 0.05$) with the dependent variables have been listed in the following paragraphs for each of the study population group then the Ladakh (Pooled) group.

Among Bodhs, the number of children ever born per ever-married woman has been found positively correlated with (present) age of woman, number of foetal deaths experienced, number of infant deaths experienced, (household) income, (household) ownership of land, ideal number of children desired, housing condition index, and usage of family planning methods. Negative correlation has been found with economic characteristics of husband, educational characteristics of woman, age at marriage of woman, family structure, (offspring) gender preference, and place of residence. Among Baltis, positive correlation has been observed with (present) age of woman, number of infant deaths experienced, family structure, ideal number of children desired and age at menarche. And negative correlation was seen with economic characteristics of woman and husband, age at marriage of woman and husband, and type of medical facilities availed. But among both Arghuns and Brokpas, positive correlation was noticed with only (present) age of woman, number of infant deaths experienced, (household) income and ideal number of children desired. And, whereas in the former, negative correlation was noticed with economic and educational characteristics of husband; among the latter group, the same was observed with educational characteristics of both women and husband and also age at marriage of woman.

In case of the Ladakh (Pooled) group, positive correlation was found between the number of children ever born to woman and the (present) age of woman, number of fetal and infant deaths experienced, (household) income, (household) ownership of land, religion, ideal number of children desired and housing condition index. And, negative correlation was observed with economic characteristics of woman and husband, educational characteristics of woman and husband, age at marriage of woman, (offspring)

gender preference, age at menarche, place of residence, and type of medical facilities availed.

With respect to the number of children surviving per ever-married woman, positive correlation among Bodhs was noticed with (present) age of woman, (household) income, (household) ownership of land, ideal number of children desired, communication facilities index, housing condition index and usage of family planning methods. And, negative correlation was found with educational characteristics of woman, age at marriage of woman, family structure, (offspring) gender preference and place of residence. Among Baltis, positive correlation was noticed with only (present) age of woman, (household) income, family structure, ideal number of children desired and housing condition index. And, negative correlation was observed with respect to economic characteristics of woman, educational characteristics of woman and husband, age at marriage of woman and (offspring) gender preference. Whereas among Brokpas, positive correlation was noticed with only (present) age of woman and ideal number of children desired; among Arghuns, the same relationship was found with these two variables as well as (household) income and housing condition index. Negative correlation among Arghuns was observed with educational characteristics of woman and husband and age at marriage of woman.

The Ladakh (Pooled) group showed that the number of children surviving was positively correlated with (present) age of woman, (household) income, (household) ownership of land, ideal number of children desired, housing condition index and usage of family planning methods. And, negative correlation was noticed with economic characteristics of woman and husband, educational characteristics of woman and husband, age at marriage of woman and (offspring) gender preference.

Correlation of the number of child loss experienced by woman among Bodhs and Baltis was observed positive with (present) age of woman, number of children ever born and ideal number of children desired. But, while among the former group, negative correlation was observed with only economic characteristics of husband, (household) income and educational characteristics of woman and husband, among Baltis the same relationship was found with economic characteristics of both woman and

husband, educational characteristics of woman and husband, age at marriage of woman, type of medical facilities availed and usage of family planning methods. Further, among Arghuns, positive correlation was noticed not only with (present) age of woman, number of children ever born and ideal number of children desired, but also with family structure. Negative correlation amongst them was found with educational characteristics of woman and husband, place of residence and housing condition index. Among Brokpas, only (present) age of woman and number of children ever born showed positive correlation, and only economic characteristics of husband registered negative correlation with the dependent variable.

In case of the Pooled Ladakh data, positive correlation was observed between the number of child loss experienced by woman and (present) age of woman, number of children ever born, (household) ownership of land, religion, family structure and ideal number of children desired. And, negative correlation was found with economic characteristics of husband, educational characteristics of woman and husband, age at marriage of woman, place of residence, type of medical facilities availed, housing condition index and usage of family planning methods.

With respect to the usage of family planning methods, among Bodhs, positive correlation was observed with (present) age of woman, number of children surviving, (household) ownership of land, ideal number of children desired, place of residence, communication facilities index, housing condition index, and source of knowledge of family planning methods. Among Baltis, similar relationship was observed with present age of woman, number of children surviving, economic characteristics of husband, (house-

hold) income, educational characteristics of husband, place of residence, communication facilities index, type of medical facilities availed, housing condition index and source of knowledge of family planning methods. And, whereas among Arghuns the usage of family planning methods seemed to be positively correlated with only (present) age of woman, number of children surviving, family structure, and housing condition index, among Brokpas the same correlation was noticed only with source of knowledge of family planning methods.

In case of the Ladakh (Pooled) group, the usage of family planning methods was observed positively correlated with (present) age of woman, number of children surviving, economic characteristics of husband, (household) income, educational characteristics of woman and husband, place of residence, communication facilities index, type of medical facilities availed, housing condition index and source of knowledge of family planning methods. And, negative correlation was found only with religion.

Regression (Multiple)

1. Dependent Variable: Number of Children Ever Born to Ever-Married Woman

The multiple regression equation estimated for the Ladakh (Pooled) group has shown 8 independent variables as significant predictors of the dependent variable ($p < 0.05$). These variables in the decreasing order of their relative importance (in predicting the dependent variable) as indicated by the Beta values are: (present) age of woman, number of infant deaths experienced by woman, ideal number of children desired, (household) income, place of residence,

Table 1: Results of multiple regression analysis (dependent variable-number of children ever born¹) for Ladakh (Pooled) group

Independent variable	Correlation	b	SE b	Beta	F	Sig F
Number of infant deaths experienced	0.5478*	1.4305	0.0942	0.3631	230.757	0.0000
Ideal number of children desired	0.4948*	1.5402	0.1024	0.3491	226.380	0.0000
(Present) age of woman	0.4959*	0.5375	0.0331	0.3763	263.749	0.0000
Age at marriage of woman	-0.2310*	-0.3714	0.1054	-0.0818	12.411	0.0005
(Household) income	0.1540*	0.3875	0.0800	0.1213	23.432	0.0000
Place of residence	-0.1119*	-0.5957	0.1284	-0.1112	21.525	0.0000
Family structure	0.0361*	0.4979	0.1230	0.0966	16.387	0.0001
Religion	0.1722*	0.2807	0.1260	0.0522	4.960	0.0262

MR = 0.7879 ; $R^2=0.6207$; SE=1.5964; F(Eqn)=158.3383; Sig F (Eqn)=0.0000

1. To woman (ever - married respondent)

*, Significant at the 0.05 level

F-values-significant at the 0.05 level

family structure, age at marriage of wife and religion. Together these variables seem to have explained 62.1 percent of the variation in the dependent variable-number of children ever born to woman. The F (Eqn) statistic - 158.3383 has been found significant ($p < 0.05$), which points out significant correlation between the dependent and the selected independent variables (Table 1).

The multiple regression results show that infant mortality is an important determinant of fertility (number of children ever born). It seems people are seeking births, to recompensate for the child loss, and achieve a certain desired number of children. The other important determinants showing positive impact on fertility are, ideal family size desired by woman, age of woman, and (household) income. Owing to the relatively low level of development of the study area; largely agro-pastoral economy; limited agricultural season and concomitant hardships, relatively high infant and child mortality levels; as well as cultural importance of kinship network; the desire for a certain ideal family size (usually medium to large, i.e., more than the officially recommended norm of two children) is embedded in the perceived values and roles that children perform in their families. And, increase in this desired ideal number appears to increase fertility. Such a setting may be encouraging the higher income households especially to desire and have more children, so that increase in (household) income seems to increase fertility. However, due to the complex nature of income-a deeper probe into the income-fertility interaction is required. Fertility also increases with the advancement of age of woman.

The religion Islam, as compared to Buddhism and nuclear family structure, as compared to joint one too, seem to have pronatalist influence. That is, fertility appears relatively high among Muslims, and also when the family structure is nuclear. On the other hand, age at marriage of woman has a negative impact on fertility; i.e., as the age at marriage increase, fertility decreases. This can be due to the delay in exposure to the risk of conception, relatively greater chances of woman being educated and/or employed. Education, work force participation enhances the chances of exposure to the outside world, leading to changes in traditional attitude towards family size, sex composition of children, and usage of contraception.

Urban residence as compared rural one also seems to exert a negative impact on fertility. Existence of certain urban advantages like, relatively better educational, communication, medical facilities, better and diverse employment opportunities, greater exposure to the outside world usually lead to higher literacy, work force participation, and age at marriage, even in case of women, and also lower infant and child mortality levels. These in turn, often change large family size ideals, offspring gender preference which are not conducive to fertility.

It may be mentioned here that, among the independent variables in the analysis, infant mortality, ideal number of children desired, and age of woman appear to determine fertility within and across the individual population groups, as well as in the study population as a whole (Table 2). The other variables mentioned above seem to show similar statistically significant impact in one or more population groups, but not across all, or in the study population as a whole. Apart from these, usage of family planning methods appear to increase fertility among Bodhs, and increase in foetal mortality as well as preference for son seem to increase fertility among Baltis.

2. Dependent Variable: Number of Children Surviving to Ever Married Woman

When the regression analysis is done with number of children surviving as the dependent variable the equation has included 7 independent variables as significant predictors ($p < 0.05$). These variables in the decreasing order of their relative importance (as indicated by their Beta values) are: ideal number of children desired, age of woman, (household) income, place of residence, family structure, usage of family planning methods and age at marriage of woman. The findings suggest that the ideal number of children desired, age of woman, (household) income, nuclear family structure and rural place of residence show statistically significant positive impact on the same. Usage of family planning methods also appear to exert similar impact, while age at marriage of woman have negative impact on number of children surviving (in case of the study population as a whole). These 7 variables together have also been found to explain 44.0 percent of the variance in number of children surviving to woman. The F (Eqn) statistic at

Table 2: Results of multiple regression analysis (dependent variable-number of children ever born¹) for various population groups of Ladakh region in Jammu and Kashmir, India

<i>Independent variable</i>	<i>Correlation</i>	<i>b</i>	<i>SE b</i>	<i>Beta</i>	<i>F</i>	<i>Sig F</i>
Population Group: Bodh (Buddhist)						
Ideal number of children desired	0.4669*	1.1857	0.1598	0.3354	55.026	0.0000
(Present) age of woman	0.4322*	0.3684	0.0495	0.3289	55.285	0.0000
Number of infant deaths experienced	0.4344*	1.3792	0.2101	0.2927	43.105	0.0000
Age at marriage of woman	-0.2142*	-0.4113	0.1530	-0.1177	7.226	0.0076
Place of residence	-0.1435*	-0.6147	0.1877	-0.1429	10.726	0.0012
Usage of family planning method	0.1610*	0.4375	0.1719	0.1091	6.480	0.0115
(Household) income	0.2106*	0.2924	0.1266	0.1044	5.336	0.0216
MR = 0.7150 ; R ² =0.5112; SE=1.4204; F(Eqn)=40.6361; Sig F (Eqn)=0.0000						
Population Group: Balti						
Number of infant deaths experienced	0.5968*	1.5690	0.1295	0.4237	146.881	0.0000
(Present) age of woman	0.5853*	0.6752	0.0566	0.4158	142.068	0.0000
Ideal number of children desired	0.4817*	1.7450	0.1636	0.3552	113.775	0.0000
Family structure	0.1342*	0.4506	0.1843	0.0791	5.975	0.0151
Age at marriage of woman	-0.2476*	-0.4598	0.1775	-0.0861	6.705	0.0101
Number of foetal deaths experienced	0.0942	-0.3790	0.1598	-0.0798	5.622	0.0184
(Offspring) gender preference	-0.0928	-0.5022	0.2191	-0.0755	5.256	0.0226
MR = 0.8359 ; R ² =0.6988; SE=1.5838; F(Eqn)=96.0946; Sig F (Eqn)=0.0000						
Population Group: Brokpa						
(Present) age of woman	0.6883*	0.9218	0.1329	0.6218	48.097	0.0000
Number of infant deaths experienced	0.3733*	1.0430	0.3284	0.2827	10.085	0.0026
Ideal number of children desired	0.3636*	1.0241	0.4227	0.2180	5.869	0.0191
MR = 0.7828 ; R ² =0.6128; SE=1.9756; F(Eqn)=26.3758; Sig F (Eqn)=0.0000						
Population Group: Arghun						
Ideal number of children desired	0.5617*	1.7193	0.2457	0.3841	48.972	0.0000
Number of infant deaths experienced	0.5045*	1.3416	0.2296	0.3214	34.128	0.0000
(Present) age of woman	0.4851*	0.4518	0.0769	0.3342	34.495	0.0000
(Household) income	0.1937*	0.4830	0.1454	0.1810	11.033	0.0011
Place of residence	-0.1216	-0.6314	0.2789	-0.1247	5.123	0.0251
Age at marriage of woman	-0.2365*	-0.5189	0.2415	-0.1130	4.618	0.0333
MR = 0.7855 ; R ² =0.6170; SE=1.5503; F(Eqn)=38.6630; Sig F (Eqn)=0.0000						
Population Group: Muslim (Pooled)						
Number of infant deaths experienced	0.5580*	1.4140	0.1078	0.3730	171.985	0.0000
Ideal number of children desired	0.5005*	1.6953	0.1311	0.3575	167.332	0.0000
(Present) age of woman	0.5494*	1.6170	0.0431	0.4001	205.285	0.0000
(Household) income	0.1054*	0.4075	0.1002	0.1226	16.545	0.0001
Place of residence	-0.1214*	-0.5481	0.1675	-0.0957	10.715	0.0011
Family structure	0.0820*	0.5060	0.1587	0.0905	10.166	0.0015
Age at marriage of woman	-0.2020*	-0.3065	0.1397	-0.0598	4.810	0.0288
MR = 0.8068 ; R ² =0.6510; SE=1.6633; F(Eqn)=131.8800; Sig F (Eqn)=0.0000						

1. To woman (ever - married repondent)

*, Significant at the 0.05 level

F-values-significant at the 0.05 level

86.8212 has been found significant ($p < 0.05$), which indicates significant correlation between the dependent and all these 7 selected independent variables (Table 3).

3. Dependent Variable : Number of Child Loss Experienced by Woman

In case of this dependent variable (an indicator of child mortality), the multiple regression

equation estimated for the Ladakh (Pooled) group has included 9 independent variables as significant predictors ($p < 0.05$). These in the order of their relative importance are: number of children ever born to woman, usage of family planning methods, religion, age of woman, type of medical care availed, (household) income, economic characteristics of husband, (offspring) gender preference. They together have been found to explain 35.5 percent of the variance in

Table 3: Results of multiple regression analysis (dependent variable-number of children surviving¹) for various population groups of Ladakh region in Jammu and Kashmir, India

<i>Independent variable</i>	<i>Correlation</i>	<i>b</i>	<i>SE b</i>	<i>Beta</i>	<i>F</i>	<i>Sig F</i>
Population Group: Bodh (Buddhist)						
Ideal number of children desired	0.4792*	1.1308	0.1459	0.3688	60.048	0.0000
(Present) age of woman	0.3820	0.3315	0.0450	0.3412	54.038	0.0000
Usage of family planning method	0.2193*	0.6357	0.1581	0.1828	16.172	0.0001
Place of residence	-0.1303*	-0.7825	0.1779	-0.2098	19.344	0.0000
(Household) income	0.3024*	0.5004	0.1211	0.2060	17.089	0.0000
Age at marriage of woman	-0.2112*	-0.3857	0.1409	-0.1272	7.490	0.0066
Family structure	-0.1230*	0.3692	0.1743	0.1061	4.490	0.0350
MR = 0.6713 ; R ² =0.4506; SE=1.3061; F(Eqn)=31.8681; Sig F (Eqn)=0.0000						
Population Group: Balti						
Ideal number of children desired	0.5387*	1.5558	0.1497	0.4573	107.936	0.0000
(Present) age of woman	0.4439*	0.4143	0.0490	0.3684	71.606	0.0000
(Offspring) gender preference	-0.1822*	-0.5007	0.2002	-0.1087	6.257	0.0129
Family structure	0.1269*	0.5465	0.1762	0.1386	9.620	0.0021
(Household) income	0.1498*	0.2587	0.1088	0.1071	5.654	0.0181
MR = 0.6808 ; R ² =0.4634; SE=1.4587; F(Eqn)=50.4370; Sig F (Eqn)=0.0000						
Population Group: Brokpa						
(Present) age of woman	0.5852*	0.6204	0.1259	0.5406	24.294	0.0000
Ideal number of children desired	0.3492*	0.9259	0.3989	0.2546	5.388	0.0243
MR = 0.6631 ; R ² =0.4397; SE=1.5075; F(Eqn)=38.4509; Sig F (Eqn)=0.0000						
Population Group: Arghun						
Ideal number of children desired	0.5828*	1.7719	0.2345	0.4873	57.091	0.0000
(Present) age of woman	0.3871*	0.3207	0.0704	0.2920	20.743	0.0000
(Household) income	0.2290*	0.4033	0.1366	0.1861	8.719	0.0037
MR = 0.6631 ; R ² =0.4397; SE=1.5075; F(Eqn)=38.64509; Sig F (Eqn)=0.0000						
Population Group: Muslim (Pooled)						
Ideal number of children desired	0.5212*	1.5290	0.1187	0.4451	165.970	0.0000
(Present) age of woman	0.4425*	0.4053	0.0381	0.3627	113.364	0.0000
(Household) income	0.1771*	0.3902	0.0859	0.1620	20.652	0.0000
Family structure	0.0543*	0.4741	0.1437	0.1170	10.888	0.0010
Age at marriage of woman	-0.1507*	-0.2589	0.1267	-0.0697	4.175	0.0415
MR = 0.6619 ; R ² =0.4381; SE=1.5260; F(Eqn)=77.4939; Sig F (Eqn)=0.0000						
Population Group: Ladakh (Pooled)						
Ideal number of children desired	0.5096*	1.3948	0.0927	0.4223	226.602	0.0000
(Present) age of woman	0.4189*	0.3806	0.0293	0.3560	169.116	0.0000
(Household) income	0.2191*	0.4623	0.0720	0.1933	41.186	0.0000
Family structure	0.0002	0.4403	0.1106	0.1141	15.853	0.0001
Place of residence	-0.0510*	-0.5032	0.1170	-0.1255	18.507	0.0000
Usage of family planning method	0.0980*	0.4196	0.1091	0.1059	14.780	0.0001
Age at marriage of woman	-0.1780*	-0.3060	0.0934	-0.0900	10.738	0.0011
MR = 0.6630 ; R ² =0.4395; SE=1.4516; F(Eqn)=86.8212; Sig F (Eqn)=0.0000						

¹ : ("Currently" living) to woman (ever - married respondent)

* : Significant at the 0.05 level

F-values-significant at the 0.05 level

the number of child loss experienced by woman. And, the significant F (Eqn) statistic of 47.1630 (p<0.05) indicates significant correlation between the dependent and the selected independent variables (Table 4).

The multiple regression results, when number of child mortality is the dependent variable not only show that number of children ever born, or

fertility, is an important determinant, but also seems to be exerting statistically significant positive impact on the same. That is, high fertility leads to high child mortality and vice - versa , as already mentioned. (Similar results have been observed within and across individual population groups). Other determinants registering positive impact on child mortality at the aggregate

Table 4: Results of multiple regression analysis (dependent variable-number of child loss¹) for various population groups of Ladakh region in Jammu and Kashmir, India

<i>Independent variable</i>	<i>Correlation</i>	<i>b</i>	<i>SE b</i>	<i>Beta</i>	<i>F</i>	<i>Sig F</i>
Population Group: Bodh (Buddhist)						
Number of children ever born	0.4730*	0.4990	0.0473	0.5494	111.327	0.0000
(Household) income	-0.1313*	-0.2568	0.0563	-0.2331	20.772	0.0000
Usage of family planning method	-0.0742	-0.2805	0.0807	-0.1778	12.078	0.0006
MR = 0.5511; R ² =0.3037; SE=0.6621; F(Eqn)=40.1221; Sig F (Eqn)=0.0000						
Population Group: Balti						
Number of children ever born	0.5156*	0.6655	0.1019	0.3636	42.644	0.0000
(Present) age of woman	0.4435*	0.2521	0.0562	0.2478	20.094	0.0000
Usage of family planning method	-0.1636*	-0.8108	0.1901	-0.1999	18.194	0.0000
Type of medical facilities availed	-0.2228*	-0.4573	0.1721	-0.1252	7.064	0.0083
Age at marriage of woman	-0.2258*	-0.3238	0.1594	-0.0968	4.126	0.0431
MR = 0.6163; R ² =0.3798; SE=1.4188; F(Eqn)=35.7660; Sig F (Eqn)=0.0000						
Population Group: Brokpa						
Number of children ever born	0.4710*	0.8728	0.2129	0.4885	16.807	0.0001
Usage of family planning method	-0.2059*	-1.2826	0.6331	-0.2414	4.104	0.0480
MR = 0.5289 ; R ² =0.2798; SE=1.5585; F(Eqn)=9.9049; Sig F (Eqn)=0.0002						
Population Group: Arghun						
Number of children ever born	0.4411*	0.4061	0.1008	0.3202	16.249	0.0001
(Present) age of woman	0.3481*	0.1550	0.0530	0.2339	8.558	0.0040
Place of residence	-0.2260*	-0.5849	0.1775	-0.2355	10.861	0.0012
MR = 0.5253 ; R ² =0.2759; SE=1.0344; F(Eqn)=8.6692; Sig F (Eqn)=0.0000						
Population Group: Muslim (Pooled)						
Number of children ever born	0.4991*	0.6732	0.0731	0.3931	84.890	0.0000
Usage of family planning method	-0.1845*	-0.6507	0.1339	-0.1840	23.612	0.0000
(Present) age of woman	0.3824*	0.1852	0.0397	0.2008	21.784	0.0000
Type of medical facilities availed	-0.1823*	-0.3760	0.1266	-0.1113	8.821	0.0031
Place of residence	-0.1775*	-0.3260	0.1330	-0.0952	6.006	0.0146
MR = 0.5866; R ² =0.3441; SE=1.3612; F(Eqn)=52.1394; Sig F (Eqn)=0.0000						
Population Group: Ladakh (Pooled)						
Number of children ever born	0.4889*	0.6686	0.0518	0.4329	166.551	0.0000
Usage of family planning method	-0.1785*	-0.5306	0.0899	-0.1772	34.864	0.0000
Religion	0.2286*	0.5353	0.0915	0.1759	32.227	0.0000
(Present) age of woman	0.3224*	0.0976	0.0290	0.1207	11.308	0.0008
Housing condition index	-0.0593*	-0.1177	0.0691	-0.0571	2.901	0.0889
Type of medical facilities availed	-0.1317*	-0.2521	0.0889	-0.0846	8.043	0.0047
Economic characteristics of husband	-0.2152*	-0.0944	0.0428	-0.0701	4.865	0.0277
(Offspring) gender preference	0.0189*	0.2129	0.0987	0.0628	4.654	0.0313
(Household) income	-0.178*	-0.1272	0.0596	-0.0704	4.548	0.0333
MR = 0.5954; R ² =0.3545; SE=1.1791; F=47.1630; Sig F (Eqn)=0.0000						

1. Per woman [number of child deaths experienced by woman (respondent)]

*. Significant at the 0.05 level

F-values-significant at the 0.05 level; ns - non-significant

level are, age of woman, religion, and absence of (offspring) gender preference. Child mortality seems to increase with the advancement of age of woman. And, Muslims seem to have experienced higher child mortality than Buddhists.

On the other hand, usage of family planning methods, type of medical facilities availed, economic characteristics of husband, and (household) income have a negative impact on child mortality. When there is child mortality,

there is a tendency to replace the dead child, and not favouring birth control. Utilization of both folk and modern medical facilities, as compared to only the latter type, tends to increase child mortality. This is because, in the former case, modern medical care is sought, only when all types of folk treatments fail, and the children are brought to practitioners, institutions in a critical condition, when it becomes difficult to save them.

Husband's occupation in the service sector as, while collar workers, professionals, technicians etc., seems to decrease child mortality, as compared to their occupation in the agricultural sector, or unskilled activities. Child mortality level seems moderate, when the husband is engaged in trade/commerce. As already mentioned, fertility is lower, when husbands are in the service sector than in other sectors. And, service sector occupations often require a minimum educational qualification as compared to the agricultural sector. These attributes usually increase the chances of child survival. Child mortality is also low, when the (household) income is high, and vice-versa. High income usually reflects greater consumption of superior goods and services, including nutritious food, modern medical care, which affect positively the health and survival chances of children.

4. Dependent Variables: Usage of Family Planning Methods.

The multiple regression equation estimated for the Ladakh (Pooled) group has revealed 9 independent variables as significant predictors of the dependent variable - usage of family planning methods (by 'currently' married woman aged 15-44 years) [$p < 0.05$]. These variables in the order of their relative importance (as indicated by the Beta values) are, age of woman, source of knowledge of family planning methods, housing condition index, religion, communication facilities index, ideal number of children desired, economic characteristics of husband, type of medical care availed and number of children surviving to woman. Together they have been found to explain 28.1 per cent of the variance in usage of family planning methods. And, the significant F (Eqn) statistic 23.4412 ($p < 0.05$) has indicated significant correlation between the dependent and the selected independent variables (Table 5).

Further, according to the results, independent determinants - age of woman, ideal number of children desired, and number of surviving children seem to exert significant positive impact on the same. Relatively old women rather than young ones tend to use family planning methods, as they usually have achieved the desired ideal number of children. And, the lower this desired ideal number the higher is the propensity to use contraceptives. There is also a greater tendency to use family planning methods, when the number of surviving children is more. This

also indicates that, couples in the study area are adopting contraception only when they have achieved a certain desired number of children. Moreover, high parity woman are easier to convince to accept family planning methods than woman with lower parities in view of relatively high infant and child mortality levels.

Source of knowledge of family planning methods also appears to be an important determinant. When the source is qualified medical practitioners or paramedics, there is a greater tendency to use family planning methods, than when the source is mass media or friends/relatives. Medical personnel are more able to convince couples about benefits of small family size and allay any doubts, fears about the methods. Better housing condition (mostly noticeable in affluent houses) too, seem to have positive impact on usage of family planning methods. Similarly, when the communication facilities are good, the tendency to use any method is more. This may be due to greater access to Family Welfare services, exposure to the outside world, which often bring about changes in attitude towards contraception.

Couples utilizing only modern medical care, than both folk and modern treatments, are also more likely to use family planning methods, since they are usually less traditional in their attitude towards usage of family planning methods. There is additionally a greater tendency to use contraceptive methods, when the husbands are in the service sector or trade commerce, than when they are in the agricultural sector or pursuing unskilled activities. Buddhists are more likely to use family planning methods than Muslims. However, this picture emerges mainly on account of Baltis and Brokpas, amongst whom the level of usage is rather low, and attitude towards the same is often negative due to a number of socio-cultural reasons. As stated earlier in Paper IV, the usage of contraceptives is relatively high among Muslim Arghuns.

Therefore, a variety of demographic, economic, socio-cultural, attitudinal, physical environmental factors seem to be determining the demographic profile of the present study population. And, variations in these determinants may be responsible for the differences in demographic profiles of the study population and the major population groups of Kashmir and Jammu regions, as well as Jammu and Kashmir state and India as a whole. In other words, the tremen-

Table 5 :Results of multiple regression analysis (dependent variable-usage of family planning method¹) for various population groups of Ladakh region in Jammu and Kashmir, India

<i>Independent variable</i>	<i>Correlation</i>	<i>b</i>	<i>SE b</i>	<i>Beta</i>	<i>F</i>	<i>Sig F</i>
Population Group: Bodh (Buddhist)						
Number of children surviving	0.4843*	0.2707	0.0434	0.3964	38.876	0.0000
Housing condition index	0.3178*	0.1315	0.0440	0.1851	8.930	0.0032
Communication facilities index	0.2413*	0.2317	0.0749	0.1866	9.559	0.0023
(Offspring) gender preference	0.1193*	0.1581	0.0675	0.1406	5.490	0.0202
Source of Knowledge of contraceptives	0.2167*	0.0596	0.0296	0.1229	4.046	0.0457
MR = 0.5824 ; R ² =0.3392; SE=0.4126; F(Eqn)=19.0961; Sig F (Eqn)=0.0000						
Population Group: Balti						
Place of residence	0.300*	0.2753	0.0545	0.3074	25.551	0.0000
Source of knowledge of contraceptives	0.248*	0.1409	0.0323	0.2656	19.052	0.0000
(Present) age of woman	0.198*	0.0058	0.1095	0.2048	11.343	0.0009
MR = 0.4456 ; R ² =0.1986; SE=0.3806; F=17.9228; Sig F (Eqn)=0.0000						
Population Group: Brokpa						
Source of knowledge of contraceptives	0.434*	0.1487	0.0537	0.4339	7.652	0.0092
MR = 0.4339 ; R ² =0.1882; SE=0.2952; F=7.6525; Sig F (Eqn)=0.0092						
Population Group: Arghun						
(Present) age of woman	0.351*	0.1259	0.0338	0.3509	13.899	0.0003
MR = 0.3509 ; R ² =0.1231; SE=0.4626; F=13.8991; Sig F (Eqn)=0.0003						
Population Group: Muslim (Pooled)						
Place of residence	0.294*	0.1673	0.0526	0.1727	10.118	0.0016
(Present) age of woman	0.244*	0.0905	0.0170	0.2601	28.318	0.0000
Source of knowledge of contraceptives	0.212*	0.1183	0.0254	0.2185	21.700	0.0000
Housing condition index	0.288*	0.1127	0.0358	0.1668	9.915	0.0018
Ideal number of children desired	-0.083*	-0.1016	0.0397	-0.1232	6.546	0.0109
Economic characteristics of husband	0.162*	0.0638	0.0275	0.1149	5.394	0.0208
MR = 0.4871; R ² =0.2373; SE=0.4131; F=18.1488; Sig F (Eqn)=0.0000						
Population Group: Ladakh (Pooled)						
(Present) age of woman	0.303*	0.0777	0.0172	0.2156	20.328	0.0000
Source of knowledge of contraceptives	0.230*	0.0985	0.0199	0.1880	24.498	0.0000
Housing condition index	0.277*	0.1283	0.0271	0.1836	22.354	0.0000
Religion	-0.191*	-0.1828	0.0386	-0.1785	22.453	0.0000
Communication facilities index	0.201*	0.1966	0.0484	0.1523	16.509	0.0001
Economic characteristics of husband	0.118*	0.0531	0.0215	0.0940	6.117	0.0137
Type of medical facilities availed	0.102*	0.0876	0.0370	0.0884	5.591	0.0184
Ideal number of children desired	-0.015*	-0.1008	0.0356	-0.1157	8.022	0.0048
Number of children surviving	0.266*	0.0752	0.0288	0.1330	6.798	0.0094
MR = 0.5304 ; R ² =0.2813; SE=0.4180; F=23.4412; Sig F (Eqn)=0.0000						

1. By woman("currently" married respondent) aged 15-44 years (or by her husband)

*, Significant at the 0.05 level

F-values-significant at the 0.05 level

dous demographic diversity within and across Indian states/regions, does seem to be the function of the interplay of these determinants at the micro level, as suggested earlier, although broadly, the progressive growth of population may be the crux of the whole population problem in most cases.

In fact, even though the current population trends of the population under study, indicate a difference with the parent Jammu and Kashmir state and India as a whole, the consideration of

birth rare in conjunction with the death rate implies population growth potentials, in case of all. In the study population, the age structure also highlights such possibility. The average number of surviving children to woman at the end of their reproductive careers (3.6) [despite a loss of 30 percent of births], too suggests that the population may be increasing rather than declining and the level of mortality may not be

sufficiently high to balance the fertility level encountered. It also seems quite clear that the population under study is demographically much backward than the demographically advanced state of Kerala.

Further, it may be mentioned that the demographic diversity due to the interplay of various micro-level determinants is also noticeable at the individual population level, within the Ladakh region itself. Broadly, it appears that there may be a demographic polarization, with Buddhist Bodhs and Muslim Arghuns on one side and Muslim Baltis and Brokpas on the other. It has been observed that given the same demographic, economic, socio-cultural characteristics, attitude towards family size and sex composition of children and physical environmental background, fertility and child mortality levels are relatively low and usage of family planning methods is relatively high among Bodhs and Arghuns than among Baltis and Brokpas in many instances.

This difference however, may partly be attributed to the difference between the Leh and Kargil districts, in terms of development and economic, socio-cultural transformation. The pace of transformations in fact, appears relatively slow in the Kargil district, where most of the Baltis and all Brokpas reside, than in the Leh district, where most of the Bodhs and Arghuns are living. It may nevertheless be noted that the few literate, service sector Balti women have registered the demographic features of relatively low fertility and child mortality levels. These findings hence, corroborate the need for micro-level research as well as micro-level solutions of the population problem.

The present study findings have additionally pointed out that the Ladakh region may not be a specialized niche in terms of the effects of high-altitude stresses (mainly hypoxia) on fertility, mortality, since a host of other determinants seem to be influencing the dynamics of population components and shaping up the de-

mographic profile, although such effects can not also be ruled out all together per se. Thus, the present study supports the views of many others that the determinants influencing the population components at low altitudes, are also active at high altitudes, and may have simultaneous or ever overriding effects, on the same. And, there also seems to be a potential of population growth, even though the mortality level is relatively high in this high-altitude area.

On the whole, the present demographic scenario of the Ladakh region (if the present study population trends and differentials are considered to indicate the situation), may not be conducive to its age old-man-environment symbiosis and natural and cultural heritage, and may add to the problems faced by the region as well as Jammu and Kashmir state as a whole. In other words, the present study findings endorse the apprehensions of progressive population growth and allied complexities in the Ladakh region. Hence, various micro-level determinants mentioned earlier, may be manipulated by policy measures, to counteract the existing / potential population problems and to achieve the ultimate goal of sustainable development and well being.

KEY WORDS Fertility Measures. Mortality measures. Family Planning Methods. Correlation. Regression. Ethnic Group. Jammu and Kashmir.

ABSTRACT Statistical tools mainly multiple regression have been utilised to study the impact of various ecological, biological and socio-economic variables on fertility, mortality and usage of family planning methods and various population groups of Ladakh region. Various variables show important bearing on the livebirths, infant mortality and usage of family planning methods.

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