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DIFFERENTIALS IN CUMULATIVE FERTILITY BY EDUCATION OF MOTHER

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DIFFERENTIALS IN CUMULATIVE FERTILITY BY EDUCATION OF MOTHER:

By

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Introduction and Relevant Literature:

Female education has been repeatedly shown to be one of the most significant factors in fertility decline in many countries around the world. This relationship has been found to be true in Pakistan in various national level studies conducted here. Significant negative associaitons between female education and fertility were found in both the National Impact Survey, 1968-1969 (NIS) and the recently completed Pakistan Fertility Survey, 1976 (PFS). In a subsample of those women from the NIS who had heard of family planning methods, illiterate women in urban areas had 5.3 children ever-born while literate women had 4.9;[I]

Similarly, analysis from the PFS data shows that the mean number of children ever-born for women without schooling, those with primary education and those with secondary and higher education were 4.4, 3.4

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[I]In a multiple regression analysis using a similar subsample, women who had education upto matric or above were the ones for whom educational level had significant negative effect on CEB. In another analysis, from NIS were the sample was restricted to women 35-49 years of age and those who were using modern methods of contraception, women who were literate had a significantly smaller number of CEB than the illiterate women.

and 2.9 respectively (PFS report, Table 2.2.4). Although a very small proportion (4%) of the women belonged to the later category, having a secondary or higher education was related with a decrease in CEB of 1.5. Without further analysis, however, we cannot state how much of this difference can be attributed (in a causal sense) to female education itself. The negative association between female education and fertility has also been shown to be true in smaller, more restricted sample in Pakistan (1,3).

Findings from some of the developing countries like India, Egypt and the Philippines show that fertility is consistently lower among women with higher education than among women with low education and illiterate women. Driver [6] working on Indian data observed that the mean number of ever born children were 4.7 for females with no education, 4.3 with primary school education and 3,4 with above primary school education respectively. Similarly, Khalifa [13] showed for Egypt that the number of ever born children to wives age 45 or more in different education categories (low medium and high) were 7.89, 4.61 and 4.79 respectively. Moreover, mother's education had a larger negative impact on fertility than the father's education.

Once the negative associaiton between female education and fertility has been established it is important to examine the routes through which this association manifests itself. Female education can have both direct and indirect effects on fertility. The direct effect can be through widening horizons and increasing contraceptive knowledge while the indirect effect can work through factors like higher female labour force participation, a higher age at marriage or a higher

perceived opportunity cost of children for the more educated women (4, 5, 11 and 17). Harman [9] illustrates from Philippino data that the direct effect of increased female education works through a reduction in the desired family size, while the indirect effects work through increasing in the age at marriage and labour force participation.

It might be emphasized here that one of the variables, which is curcial for fertility decline, namely contraceptive use, is positively effected by female education. It has been found in Taiwan, for example, that the better educated women start using contraception earlier in lives than other women (8). In Pakistan, contraceptive use was found to be significantly higher among women with ten or more grades of education (24).

Despite the relatively great importance of female education in reducing fertility rates, Pakistan has not been able to increase the proporiton of literate female to a degree that would have been desirable. The percentage of literate females age ten and over increased from 8.2 in 1961 to 11.6 in 1972. The reasons for this relatively small gain are rooted both in lack of sufficient educational opportunities and in parent's reluctance to educate their daughters (21 & 26).

OBJECTIVES OF THE PRESENT STUDY

Given the past findings on the female education-fertility relationship, our attempt in the present study is to analyse the Housing, Economic and Demographic (HED) survey data in order to see whether the data from this survey support the findings of NIS, PFS and other studies. We have also made an attempt to look at the fertility differentials by mother's education for each of the four provinces separately. This has been done in order to compare the levels at which education makes a difference within various provinces, if at all.

Our objective is to do analysis of the differences in the fertility of women who were reported to have attained varying levels of education by 1973. The two measures of fertility that have been used consist of (1) children everborn (CEB) and (2) children still living (CSL) at the time of the HED survey. Tabulated data have been provided by the Census Organization for the following four educational categories (of women): (1) Illiterate (2) Less than matric (3) Matric and above (4) Specialized education including professional education like medicine or engineering and all education higher than the bachelor's level.

DATA-SOURCE AND LIMITATIONS

As pointed out earlier, data from the 1973 HED survey would be used for the study. We have available to us, at the present time, data that the census organization has prepared in the form of cross-tabulations for Pakistan and its provinces. The HED survey was based on a sample of about 300,000 households. The figures in the cross-tabulations are 'blown up' figures which provide estimates of actual figures for the country.

Like in any set of cross tabulations, only a limited number of relationships between different variables can be studied, at the same time, from the HED survey. A serious drawback that analysis from such data has for the type of analysis that we had originally intended to do is our inability to control (simultaneously) for many of the variables that should be controlled. It is because of these reasons that we cannot probe the many direct and indirect effects on fertility at any length. It must be pointed out here that all the data in the HED survey were reported by the household head or any adult member of the family. The respondent

in most cases would have been a male because the interviewing was done by males. There might be some biases in reporting because of this, particularly with relation to female characteristics. (Shah, May 1977).

We have excluded childess women or non-mothers, and used only ever married mothers for our analysis. This was done because the proprotion of childess women differed substantially among different educational categories (see Appendix Table II). For example, 25% of the women with specialized education were childress as compared to only 13% of the illiterate women.

Finally, data on female education have been classified very broadly for these HED tabulations that we had to use for our study. This in some cases resulted in empty cells or very small-sized cells in some of our tables.

FINDINGS

Only 3 percent of the rural and 19 percent of the urban women were reported to be literate in the 1973 HED survey. More than two third of the literate urban women had an education less than matriculation. Urban areas of Sind Punjab had literacy rates of 21 percent and 19 percent while NWFP and Sind had considerably lower rates 11 percent each. The category of specialized education had neglibible small proportions of women in both rural and urban areas (Appendix Table 1).

Fertility Differentials:

Literate women in general had a lower number of CEB than illiterate women (Table 1). Within the rural areas, slightly fewer CEB were reported for women who had an education below matric, as compared to illiterate women. The reported CEB for women in the next educational category (matric and above) as higher than that of the less educated women , for

Pakistan as well as almost all the provinces. Women with specialized education had consistently smaller CEB than the women with lesser education. The larger number of CEB for the group of women with medium (matric and above) education compared to the women with low (matric)education is somewhat puzzling. One reason for this might be the better reporting for the former group of women, as compared to less educated.

Within the urban areas, we observed a steady and consistent decline in CEB by educational level of mother in Pakistan and all its provinces. While the fertility of women with low (matric) education was not very different from the illiterate women, those with medium education had roughly one child lesser than the ones with low education. Also, those with high (specialized) education had on the average about one child lesser than those with medium education. Thus, the highly educated women in urban areas, had, on the average, 2.2 children less than the illiterate women.

When we examined the completed family size by looking at the CEB to women age 45-49, the women with higher education consistely had a smaller completed family size than the illiterate or less educated women (Table 2). One of the most striking features with regard to the differentials in completed family size of women was the consistently higher fertility reported by the women with low education (matric) as compared to illiterate women. This was true in the rural as well as urban areas of Pakistan and all its provincess. Again, one possible reason for this finding could be the better reporting for the relatively educated women. It is, however, difficult to state how much of the observed differential can be attributed to the reporting differential itself.

TABLE - 1

NUMBER OF EVER-BORN AND STILL LIVING CHILDREN OF EVER-MARRIED MOTHERS AGE 10* PAKISTAN, PROVINCES AND RURAL, URBAN AREAS

Education of Mother and number of children	Pakistan			N W F P			Punjab			Sind			Baluchistan		
	T	R	U	T	R	U	T	R	U	T	R	U	T	R	U
All Women (Total)															
C E B	4.66	4.55	4.96	4.68	4.61	5.00	4.82	4.74	5.08	4.30	3.97	4.79	4.20	4.12	4.67
C S L	3.87	3.78	4.11	3.94	3.90	4.15	3.95	3.88	4.18	3.69	3.47	4.03	3.54	3.47	3.98
Illiterate															
C E B	4.68	4.56	5.08	4.69	4.62	5.09	4.85	4.76	5.21	4.30	3.97	4.89	4.20	4.13	4.68
C S L	3.87	3.37	4.15	3.94	3.90	4.20	3.95	3.88	4.22	3.67	3.47	4.05	3.53	3.47	3.95
Below Matric															
C E B	4.58	4.12	4.76	4.43	4.09	4.69	4.52	4.13	4.74	4.71	4.09	4.77	4.70	4.10	4.94
C S L	4.04	3.58	4.12	3.90	3.65	4.08	3.98	3.58	4.20	4.18	3.64	4.24	4.10	3.28	4.45
Matric & Above															
C E B	3.99	4.39	3.77	4.33	4.74	3.89	4.15	4.51	3.91	3.58	3.74	3.55	3.69	3.48	3.99
C S L	3.54	3.69	3.45	3.74	3.94	3.52	3.64	3.77	3.55	3.30	3.30	3.30	3.24	2.94	3.67
Specialized Edu,															
C E B	2.93	3.77*	2.85	2.30*	2.00	2.40	2.96	4.10*	2.78	2.94	-	2.94	3.56	-	3.56*
C S L	2.70	2.93	2.68	2.13*	1.50*	2.33	2.72	3.22	2.65	2.71	-	2.71	3.44	-	3.44*

SOURCE: HED Survey Table No. 7 and 8

*N less than 1000

TABLE - 2

COMPLETED FAMILY SIZE FOR EVER-MARRIED MOTHERS AGE 45-49 YEARS: PAKISTAN, PROVINCES AND RURAL, URBAN AREAS

Education of Mother	Pakistan			N W F P			Punjab			Sind			Baluchistan		
	T	R	U	T	R	U	T	R	U	T	R	U	T	R	U
All Women (Total)															
C E B	5.92	5.75	6.43	6.13	6,03	6.60	6.05	5.91	6.53	5.59	5.10	6.27	5.30	5.18	6.04
C S L	4.85	4.71	5.23	5.12	5.06	5.42	4.48	4.77	5.28	4.72	4.42	5.13	4.40	4.31	5.04
Illiterate															
C E B	5.90	5.74	6.44	6.11	6.02	6.58	6.04	5.91	6.54	5.53	5.08	6.26	5.28	5.18	6.01
C S L	4.82	4.71	5.17	5.10	5.05	5.37	4.85	4.76	5.22	4.66	4.41	5.07	4.39	4.31	5.02
Below Matric															
C E B	6.57	6.27	6.65	6.97	6.73*	7.27*	6.61	6.28	6.73	6.46	6.08	6.51	6.48*	5.67*	6.89*
C S L	5.64	5.23	5.76	6.03	6.00*	6.07*	5.69	5.21	5.86	5.52	4.92	5.60	5.49*	5.00*	5.74*
Matric and above															
C E B	5.57	5.63	5.55	6.13*	6.00*	6.18*	5.56	5.55	5.57	5.51	6.00*	5.49	5.11*	5.67*	3.75*
C S L	5.09	5.09	5.09	5.94*	6.00*	5.91*	4.68	4.12	4.89	5.08	6.00*	5.04	4.16*	4.33*	3.75*
Specialized Edu.															
C E B	5.33*	-	5.33*	-	-	-	5.00	-	5.00*	5.80*	-	5.80*	-	-	-
C S L	4.42*	-	4.42*	-	-	-	4.86*	-	4.86*	3.80*	-	3.80*	-	-	-

*N Less than 1000.

TABLE - 3

TABLE SHOWING THE RATIO OF DEATHS (CEB-CSL) TO CHILDREN EVER-BORN OF EVER-MARRIED MOTHERS AGE 10, PAKISTAN, PROVINCES, RURAL AND URBAN AREAS

Education of mother	PAKISTAN			N.W.F.P.			PUNJAB			SIND			B.LUCHISTAN		
	T	R	U	T	R	U	T	R	U	T	R	U	T	R	U
All Women (Total	.17	.17	.17	.16	.15	.17	.18	.18	.18	.14	.13	.16	.16	.16	.15
Illiterate	.17	.26	.18	.16	.16	.17	.19	.18	.19	.15	.13	.17	.16	.16	.16
Below Matric	.12	.13	.13	.12	.11	.13	.12	.13	.11	.11	.11	.11	.13	.20	.10
Matric and above	.11	.16	.08	.14	.17	.10	.12	.16	.10	.08	.12	.07	.12	.16	.08
Specialised Edu.	.08	.22*	.06	.07	.25*	.03	.08	.21*	.05	.08	-	.08	.03	-	.03

TABLE - 4

TABLE SHOWING RATIO OF DEATHS **(CEB-CSL)** TO EVER-BORN CHILDREN OF EVER-MARRIED MOTHERS, (45-49) YEARS, PAKISTAN, PROVINCES, RURAL AND URBAN AREAS.

	PAKISTAN			N.W.F.P			PUNJAB			SIND			BALUCHISTAN		
	T	R	U	T	R	U	T	R	U	T	R	U	T	R	U
All Women (Total)	.18	.18	.19	.16	.16	.18	.26	.19	.19	.16	.13	.18	.17	.17	.17
Illiterate	.18	.18	.20	.17	.16	.18	.20	.19	.20	.16	.13	.19	.17	.17	.17
Below Matric	.14	.17	.13	.13	.11	.17	.14	.17	.13	.15	.19	.14	.15	.12	.17
Matric and Above	.09	.10	.08	.03	.00	.04	.09	.10	.09	.09	.00	.08	.19	.24	.00
Specialized Education	.17	-	.17	-	-	-	.03	-	.03	.34	-	.34	-	-	-

Mortality Differentials:

An estimate of mortality differentials can be made by subtracting the number of children still living from number of children ever born. Table 1 shows that illiterate women lost .81 of a child compared to .23 children for women with specialized education. The corresponding figures for rural and urban areas were 1.19 and .93 for illiterate women and .84 and .17 for women with specialized education. Thus, the more educated women lost much fewer children than the illiterate women. Also, the loss in rural areas was greater than in the urban areas.

A summary measure for mortality was calculated as the ratio of deaths to children ever born (Table 3). We found a consistely smaller ratio for women age 10+ with higher education, particularly in the urban areas. This was true in Pakistan and all the four provinces. Illiterate women had a ratio of .19 compared to a ratio of only .06 for women with specialized education, in urban Pakistan. This implies that illiterate women had lost three times more children than the women with specialized education. But for the women age 45-49 the pattern was found different particularly in the category (Table 4) of women with specialized education which showed some fantastic ratios for the province of Sind which could be due to very small number of cases in these cells. Otherwise the ratios did show decline within each higher educational category.

TABLE - 5A

SEX RATIO OF EVER-BORN AND STILL LIVING CHILDREN REPORTED FOR EVER-MARRIED MOTHERS, BY EDUCATIONAL AND AGE CATEGORIES, PAKISTAN, PROVINCES AND RURAL, URBAN AREAS.

SEX RATIO OF CHILDREN EVER-BORN

Age and Education of Mothers	PAKISTAN		N.W.F.P		PUNJAB		SIND		B.LUCHISTAN	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Total										
Age 25-29 Yrs.	111	111	110	106	111	111	111	111	107	132
Age 45-49 Yrs.	118	117	122	117	117	116	125	118	112	129
Illiterate										
Age 25-29 Yrs.	111	112	110	107	111	112	111	112	107	109
Age 45-49 Yrs.	118	118	121	117	117	117	125	118	112	126
Below Matric										
Age 25-29 Yrs,	105	108	80	101	107	108	107	108	200*	119*
Age 45-49	113	117	115*	122*	110	113	126	120	89*	152*
Matric+										
Age 25-29 Yrs.	105	108	103	103	97	105	231*	109	200*	188*
Age 45-49 Yrs.	134	108	200*	97*	130	115	140*	99	113*	200*
Specialized Education										
Age 25-29 Yrs.	206*	93	-	100*	300*	75*	-	116	-	100*
Age 45-49 Yrs.	-	113	-	-	-	94*	-	142*	-	-

*N Less than 1000

TABLE - 5 B

SEX RATIO OF EVER-BORN AND STILL LIVING CHILDREN REPORTED FOR EVER-MARRIED MOTHERS, BY EDUCATIONAL AND AGE CATEGORIES, PAKISTAN, PROVINCES AND RURAL, URBAN AREAS.

SEX-RATIO OF CHILDREN STILL LIVING

AGE AND EDU. OF MOTHERS(TOTAL)	PAKISTAN		N.W.F.P		PUNJAB		SIND		BALUCHISTAN	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Age 25-29 Yrs.	110	109	107	103	110	108	112	110	107	132
Age 45-49 Yrs.	119	117	119	115	117	116	128	117	112	129
Illiterate										
Age 25-29 Yrs.	110	109	107	104	111	109	112	111	107	109
Age 45-49 Yrs.	119	117	119	115	117	117	128	117	112	126
Below Matric										
Age 25-29 Yrs.	103	107	71	100	105	108	103	107	200	119
Age 45-49 Yrs.	112	117	109	129	111	113	121	120	89	152
Matric & Above										
Age 25-29 Yrs.	105	106	103	96	94	103	245	108	200	188
Age 45-49 Yrs.	135	106	200	91	130	114	140	96	113	200
Specialized Education										
Age 25-29 Yrs.	109	89	-	100	-	75	-	107	-	100
Age 45-49 Yrs.	-	104	-	-	-	89	-	138	-	-

TABLE-6: PERCENTAGE OF EVER-MARRIED WOMEN BY EDUCATION ATTAINMENT AND AGE AT FIRST MARRIAGE

AGE AT FIRST MARRIAGE*

PAKISTAN

Educational Attainment	13	13	14	15	16	17	18	19	20	21	22	23+	Mean age at marriage*d
Total	3.6	1.0	5.5	9.4	16.4	9.6	18.7	5.9	16.0	2.2	3.5	7.9	18.69
Illiterate	3.4	1.0	5.5	9.5	16.5	9.5	18.9	5.8	16.2	2.2	3.5	7.9	18.68
Below Matric	6.0	1.3	6.1	9.1	17.0	11.7	17.3	6.7	12.0	2.7	3.9	6.3	18.37
Matric & above	6.3	.7	3.8	6.6	12.9	9.7	15.6	7.8	16.1	4.5	5.3	10.8	19.56
Specialised Education	12.3	.*4	1.5*	2.4*	4.1*	2.9*	7.4*	3.5*	11.2	6.0*	10.7	37.6	24.47
					PAKISTAN (RURAL)								
Total	3.3	.9	5.1	9.1	16.4	9.4	19.2	5.8	16.7	2.2	3.5	8.3	18.80
Illiterate	3.2	.9	5.1	9.1	16.4	9.3	19.3	5.8	16.8	2.2	3.5	8.3	18.80
Below Matric	7.5	.9	4.7	8.2	17.2	10.8	17.7	7.0	11.9	8.5	4.2	7.2	18.64
Matric & above	7.1	.7	4.3	8.7	16.5	10.2	15.2	6.9	15.8	2.8	3.7	8.0	18.86
Specialised Education	33.7	-	6.2*	6.7*	-	-	-	-	26.9*	6.2*	-	20.2*	0-b
					PAKISTAN(URBAN)								
Total	4.5	1.4	6.8	10.3	16.6	10.3	17.5	6.0	14.0	2.3	3.5	6.8	18.40
Illiterate	4.2	1.4	7.0	10.9	17.0	10.2	17.8	5.7	14.2	2.0	3.3	6.4	18.29
Below Matric	5.4	1.5	6.6	9.5	16.9	12.0	17.1	6.6	12.0	2.8	3.8	5.9	18.27
Matric & above	5.8	.6	3.5	5.5	10.9	9.4	15.8	8.2	16.2	5.4	6.2	12.3	19.94
Specialised Education	10.5	.*4	1.1*	2.0*	4.5*	3.1*	8.0*	3.8*	9.8*	6.0*	11.6	39.1	24.60

a While calculating the mean age at marriage, the 13 women were not included.

b The mean age at marriage of mothers for this group could not be calculated (accurately) because of the many missing values.

* N less than 1000

TABLE - 7

MEAN NUMBER OF EVER-BORN CHILDREN OF EVER-MARRIED WOMEN (AGED 45-49) BY THEIR AGE AT FIRST MARRIAGE.

	Total	13	13	14	15	16	17	18	19	20	21	22	23+
Pakistan	5.45	1.77	5.82	6.10	5.94	5.84	5.83	5.08	5.66	5.21	5.49	5.30	4.78
Rural	5.31	1.79	5.67	5.97	5.74	5.71	5.76	5.33	5.51	5.23	5.42	5.14	4.69
Urban	5.87	1.73	6.13	6.32	6.36	6.20	6.20	5.94	6.10	5.56	5.72	5.80	5.10

SOURCE: HED Table No. 10

Sex Ratio:

Tables on the reported sex ratios by education of number were prepared in order to examine whether the more highly educated women reported lower sex ratios. We found, that, in accordance with the past findings, in Pakistan, a consistently larger number of males (per 100 females) were reported for CEB as well as CSL in both rural and urban areas (tables 5a and 5b). Educated women in general reported somewhat lower sex ratios of CEB and CSL than the illiterate women. Also, generally lower sex ratios were reported for younger women (25-29) than for older (45-49) women. The lower sex ratios reported for younger women might be an indicator of a pattern of better reproting by younger people.

Education, Age at Marriage and Fertility:

As discussed in the introductory section above, one of the probable causal paths through which education effects fertility is the delay in marriage that is related to (higher) education. Tables 6 and 7 were constructed in order to examine this hypothesis. We calculated the mean age at marriage for each of the educational category groupings (table 6). The a ge at marriage (in urban areas) was substantially higher (24.5) for the women with specialized education compared with illiterate women (19.6). Those with an education of matric B.A. got married on the average one and a half years later than the illiterate women, while those with specialized education got married six years later.

In order to see the 'effect' of age at marriage on fertility, the CEB to ever married women (age 45-49) by their age at first marriage was calculated (table 7). A negative, though erratic, effect seemed to begin when women got married at the age of 18 years or above. But a striking differential was visible only for women who got married at the

age of 23 or more years. Women who got married at the age of 23 or more had about one child less, on the average, than women who got married at ages 13-17. Thus, it seems that if female education effects fertility through raising the age at marriage in our data this effect meanifested itself clearly only for a very all subsection of the total population. Those having specialized education were probably the only women for whom this relationship could be said to be true.

Urban-Rural Differentials in Fertility.

Although perhaps unexpected, it is evident from table 1 and 2 that the number of children ever born were consistently higher in urban as compared to rural areas. This was also true for all the provinces. When the differentials were examined by mother's education the higher urban fertility was found to be true only for women who had an education below matric. The CEB to women with an education of matric and above, however, were lower in urban than rural areas.

It might be noted here that the past studies relating rural-urban differences in fertility have consistently shown fertility to be higher in rural areas [Impact Survey Report: PGS reports 1968 and 1971] The measures used for fertility estimation in these studies were either crude birth rates or child women ratios. Both these measures use 'current' fertility or fertility in the very recent past. It is possible that the type of errors in reporting children ever born (cummulative fertility) and current fertility vary in magnitude between rural and urban areas. If the errors due to 'recall lapse' were greater for the rural areas in the HED survey, the observed differentials cannot be considered to be surprising. It should be noted here that Karim (12), while analysing commulative fertility of women in the Impact Survey reported a slightly higher number of children

ever born for urban than rural women. Also, the PFS report (1976) shows that the mean number of children ever born for all ages was slightly, but consistently, higher for urban than for rural areas. The differences persisted even after wife's education and duration of marriage were taken in to account. It can be concluded from the above discussion that contradictory findings exist regarding the rural-urban differences in fertility. Methodological studies aimed at assessing the nature and degree of reporting errors in rural and urban areas are essential in order to answer some of the issues raised above.

Discussion and Conclusions:

What can we conclude from the foregoing analysis of the HED survey data on education in relation to fertility. Despite of many of the data problems that were mentioned earlier we can draw a few tentative conclusions from our analysis. The data for the rural areas is skewed to the extent that it leads to considerable statistical problems, and not many conclusions can be drawn from it. The urban data are more promising. We do observe a consistent negative relationship between education of mother and CEB in urban areas. These with specilized education had 2.2 children less than the illiterate women in the urban areas. The difference in the completed family size of illiterate women and women with specialized education amounted to about one child in urban areas. Child mortality was significantly higher among the illiterate than literate women and declined consistently with each higher educational level, in urban areas. Child mortality was higher in rural than in urban areas. Education seemed to have a positive effect on age at marriage only for the women with specilized education. The age at marriage had a noticeable effect on fertility only for women who got married fairly late

(i.e. age 23 or above). One finding that needs to be probed further is the higher fertility in urban than in rural areas.

It is defficult to state what level forms a threshold for fertility decline in these data. It seems that an education of at least matric or more is needed in order to effect completed family size of women. This conclusion is based on the figures presented in Table 2 on the completed family size of women age 45-49. The situation might be changing at the present time with the general modernization of communities and the threshold level might shift downward, at least in urban areas. One problem with the present analysis is the categorization of the data into the classes discussed above. If we had available to us more detailed data on the lower end of the educational distribution, we could have perhaps found some more evidence of relationships. Thus, it seems that the question about probable threshold levels must await the availability of the sub sample tape from the HED survey.

One conclusion that is evident from these data is that the (published) cross-tabulations from the HED survey would not be sufficient for any study whose objective is to analyse the determinants of fertility behaviour. Similarly, detailed studies on topics like correlates of labour force participation or migration would not be possible from the published data. Only descriptive analysis of the various characteristics can be adequately carried out on the basis of these data.

Even though the conclusions are tentative and more can be stated about urban than rural areas, we feel that female education can make an impact on fertility. One channel through which such an impact can work is the consistently lower child mortality among the more highly educated women. The effect on fertility through age at marriage seems negligible since only a very small group (of women with specialized education) shows such an effect. All these relationship,however,need to be probed further in order to ascretain what the net effect of female education on fertility is.

APPENDIX TABLE - 1

PERCENTAGE OF EVER-MARRIED MOTHERS IN DIFFERENT EDUCATIONAL CATEGORIES IN PAKISTAN AND IN PROVINCES

	TOTAL		N.W.F.P		PUNJAB		SIND		BALUCHISTAN	
	R (1)	U (2)	R (3)	U (4)	R (5)	U (6)	R (7)	U (8)	R (9)	U (10)
Illiterate	97.29	81.19	89.09	88.80	96.73	81.46	98.38	78.86	96.60	88.78
Below Matric	1.67	13.02	0.01	6.37	2.12	12.76	0.01	14.95	0.01	7.37
Matric*	1.03	5.53	1.09	4.65	1.14	5.55	1.01	5.79	1.08	3.56
Specialized Education	0.00	0.26	0.01	0.18	0.01	0.24	-	0.31	- -	0.29
Total:Ever-Married Mothers	8,214,195 (1)	2,889,981 (2)	944,515 (3)	187,044 (4)	5,314,020 (5)	1,580,054 (6)	15,37,910 (7)	1,053,388 (8)	417,750 (9)	70,495 (10)

Sources: HED Survey Table No: 7 and 8

APPENDIX TABLE II

Childless women in different educational Categories.

PAKISTAN

	T		R		U	
All Women	17,71,836	(13.51)	13,36,655	(13.73)	4,35,181	(12.89)
Illiterate	16,03,205	(13.18)	12,71,498	(13.47)	3,31,707	(12.18)
Below Matric	1,07,922	(17.15)	43,770	(23.79)	64,152	(14.41)
Matric and Above	57,864	(18.90)	21,207	(19.70)	36,657	(18.46)
Specialised Education	2,845	(25.46)	180	(20.22)	2,665	(25.91)

APPENDIX TABLE III

Percentage of Childless in each age at first marriage Category for Pakistan, Rural and Urban Areas.

AGE AT FIRST MARRIAGE

	13	13	14	15	16	17	18	19	20	21	22	23+
PAKISTAN	71.40	1.30	1.68	1.73	2.18	1.85	2.86	2.31	4.70	4.11	2.64	9.91
RURAL	70.97	2.01	1.91	3.16	2.11	2.27	4.15	3.68	5.66	2.31	4.73	7.11
URBAN	72.15	-	1.27	1.73	2.18	1.85	2.86	2.31	4.70	4.11	2.64	6.02

Source: HED Table No: 10

APPENDIX TABLE 4

NUMBER OF EVER-BORN AND STILL LIVING CHILDREN OF EVER-MARRIED WOMEN AGE 10* PAKISTAN, PROVINCES AND RURAL, URBAN AREAS

Education of Mother and number of children	PAKISTAN			N.W.F.P			PUNJAB			SIND			BALUCHISTAN		
	T	R	U	T	R	U	T	R	U	T	R	U	T	R	U
All Women (Total)															
C E B	4.05	3.93	4.32	4.09	4.02	4.40	4.19	4.12	4.44	3.64	3.31	4.15	3.62	3.56	3.97
C S L	3.29	3.19	3.52	3.38	3.34	3.60	3.36	3.30	3.58	2.39	2.82	3.43	2.97	2.91	3.31
Illiterate															
C E B	4.06	3.94	4.46	4.11	4.04	4.51	4.24	4.15	4.59	3.65	3.32	4.27	3.63	3.57	4.00
C S L	3.29	3.20	3.58	3.39	3.35	3.66	3.84	3.20	3.65	3.05	2.82	3.47	2.97	2.92	3.31
Below Matric															
C E B	3.80	3.14	4.07	3.59	3.18	3.90	3.69	3.13	4.04	4.03	3.15	4.12	3.79	3.22	4.04
C S L	3.30	2.68	3.56	3.08	2.72	3.37	3.20	2.67	3.53	3.57	2.75	3.61	3.28	2.57	3,59
Matric & above															
C E B	3.23	3.52	3.07	3.07	3.19	3.28	2.91	3.60	3.22	2.88	3.11	2.83	2.84	2.60	3.22
C S L	2.82	2.90	2.78	3.07	3.19	2.94	2.91	3.60	2.88	2.62	2.78	2.61	2.43	2.15	2.86
Specialized Edu.															
C E B	2.19	3.01*	2.11	2.00*	2.00	2.00	2.28	3.15*	2.14	2.07	-	2.46	2.46	-	2.46*
C S L	1.98	2.14*	1.97	1.85*	1.50*	1.94	2.04	2.23*	2.00	1.91	-	1.91	2.43	-	2.15*

SOURCE: HED Survey Table No. 7 and 8

*N less than 1000

COMPLETED FAMILY SIZE FOR EVER-MARRIED WOMEN AGE 45-49 YEARS. PAKISTAN, PROVINCES AND RURAL, URBAN AREAS

Education of Mother	PAKISTAN			N.W.F.P			PUNJAB			SIND			BALUCHISTAN		
	T	R	U	T	R	U	T	R	U	T	R	U	T	R	U
All Women (Total)															
C E B	5.63	5.46	6.13	5.86	5.78	6.25	5.76	5.62	6.25	5.24	4.74	5.95	5.08	4.97	5.79
C S L	4.56	4.43	4.95	4.85	4.80	5.07	4.61	4.50	5.01	4.38	4.06	4.84	4.17	4.07	4.82
Illiterate															
C E B	5.61	5.45	6.14	5.85	5.77	6.24	5.75	5.62	6.25	5.19	4.74	5.95	5.06	4.97	5.75
C S L	4.53	4.43	4.88	4.83	4.79	5.04	4.58	4.49	4.94	4.32	4.06	4.77	4.15	4.06	4.77
Below Matric															
C E B	6.23	5.72	6.38	6.45	6.31	6.61	6.35	5.94	6.50	6.01	4.79	6.20	6.48	5.67	6.89
C S L	5.32	4.77	5.49	5.49	5.63	5.33	5.43	4.93	5.61	5.13	3.88	5.32	5.49	5.00	5.74
Matric and above															
C E B	5.26	4.98	5.3	6.13	6.00	6.18	5.20	4.74	5.38	5.23	6.00	5.20	5.11	5.67	3.75
C S L	4.78	4.38	4.89	5.94	6.00	5.91	4.68	4.12	4.89	4.82	6.00	4.78	4.16	4.33	3.75
Specialized Edu.															
C E B	4.27*	-	4.27*	-	-	-	3.89	-	3 89*	4.83*	-	4.83*	-	-	-
C S L	3.53*	-	3.53*	-	-	-	3.78*	-	3.78*	3.17*	-	3.17*	-	-	-

*Less than 1000

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