

## **Child Survival and Changing Fertility Patterns in Pakistan**

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### **INTRODUCTION**

Most earlier research, based on the theory of the demographic transition, focused on the association between mortality decline as a precedent to fertility decline. Whereas most of Europe experienced declines in mortality prior to fertility declines, even there the evidence is not conclusive that declines in mortality always preceded changes in fertility [Knodel and Van de Walle (1979)]. In most Asian countries which have experienced demographic transitions in the recent past mortality and fertility have declined in close succession. The position being taken here is that in certain settings substantial fertility declines, or at least an alteration in fertility patterns, may be a prerequisite to substantial declines in child mortality. The association between fertility patterns and child survival is to be investigated with a view to analysing the likely effects of changes in fertility patterns on chances of child survival.

The case of Pakistan becomes particularly interesting as it is a country which has not experienced any notable declines in fertility despite an official population planning programme and substantial development accompanied by significant declines in overall mortality.

Since child mortality levels have also remained quite high despite falls in overall mortality, the association between high fertility and high infant-child mortality in Pakistan becomes critical in terms of future fertility and health policy. Research in the developing countries context has generally focused on the impact of high levels of infant-child mortality on fertility. Studies can be identified which examine the impact of mortality on family fertility through the 'replacement' and 'insurance' effects [Preston (1978); Scrimshaw (1979)]. Consequently policy suggestions were made to reduce child mortality in order to enable population pro-

grammes to succeed in bringing down fertility levels. It was argued that only when couples/families are ensured sufficiently of the survival of their children that their desired family size began to lower.

More recently attention has turned to the effects of high fertility, largely in the form of short birth spacing and concentration of births, on levels of infant and child mortality [Cleland and Sathar (1984); Hobcraft *et al.* (1985)]. Whereas the effects of high levels of child mortality on fertility were harder to establish and quantifiably small [Choudhry *et al.* (1976)], the effects of high fertility on high levels of child mortality were found to be larger and unequivocal [Trussell and Pebley (1984)]. This has led to strong support for a maternal child health approach to family planning where the synergistic association between high fertility, particularly birth spacing, and high child mortality to be addressed in the same policy package.

In this paper we are speculating, based on available evidence of current trends in Pakistan, (a) whether existing fertility patterns can be linked with the lack of changes in child mortality and (b) whether future changes in fertility or those changes already under way are likely to influence child survival probabilities favourably? On the basis of the available evidence we also propose some policy suggestions.

### THE CONTRIBUTION OF CHILDBEARING PATTERNS ON CHILD SURVIVAL

The links between certain distinct features of Pakistan fertility and its bearings on child survival are directly proven. A large family size is associated with close spacing of children, and most probably a concentration of a greater number of siblings at ages under 5 or even under age 10. Physical resources such as housing space, food, clothing and health care are therefore spread over a larger number of children. The risks of infection are exacerbated when a large number of young children bathe, sleep and eat together. For instance, in urban Pakistan it was found that families where there were one or two children aged under 5, 18 percent of them had infectious diseases as compared to 24 percent of children of families where there were two or more children aged under age 5 [Omran (1981)]. Other 'resources', most importantly parental attention and care are divided amongst a larger number of children in cases of high fertility. These factors acquire greater importance in a country like Pakistan because a large proportion of families live at or below the poverty line, and in addition it is found that at lower levels of living households have larger proportions of children and higher dependency ratios [Sathar and Kazi (1987); Cochrane *et al.* (1990)].

High fertility usually translates into a short preceding and succeeding interval—both of which are associated with higher infant-child mortality [Rutstein (1983)]. Since children which are born into large families are also more likely to be those where household income is lower where parental education is minimal (in fact in Pakistan it is more realistic to assume that both parents are likely to be illiterate) this birth spacing effect is further compounded with the negative effects of poverty and illiteracy on child survival. However, the spacing-mortality link has been established even among children born to parents of higher socioeconomic strata [Hobcraft *et al.* (1985); Cleland and Sathar (1984)].

Given that more than one third of intervals in Pakistan are found to fall within two years of one another this association is one of the most direct links between high fertility and high levels of child mortality [Hobcraft *et al.* (1983)]. The link is found even if the older sibling dies which lends evidence that it is not competition between children but factors such as birth weight and general health of a baby born closely after its immediately older sibling which are also affected negatively. However, the main mechanisms through which this effect is thought to prevail are breast feeding (quantity and quality of breast milk), depletion of maternal health, and “competition” between children for attention and love. Despite the strong evidence of an association between child spacing and child mortality, the exact causal mechanism is less well documented.

Similarly strong associations have also been established between the age of the mother at the birth of a child, birth order of children and child mortality in Pakistan. [Alam and Cleland (1984)]. The association with mother's age is *U* shaped (with lowest mortality of children whose mothers are aged between 20 and 35) and positive with birth order excepting the first birth. Where most women on average have four to seven births, a notable proportion of child deaths can be eliminated by averting births to women aged under 20 and also to older women aged above 35 and who have born more than four or five children [Trussell and 984)].

### **THE CONTRIBUTION OF OTHER FACTORS SUCH AS DD SOCIETAL DEVELOPMENT AND WOMEN'S STATUS ON BOTH FERTILITY AND CHILD SURVIVAL**

Institutional and community services factors can strongly influence chances of child survival. In general factors related to community structures such as access to roads, electricity but particularly to schools, safe drinking water, sanitation services and health and family planning facilities, have been linked to both fertility and mortality [Casterline (1985)]. It has been argued that factors affecting the whole community such as sanitation, sewerage and potable water may in fact affect child

mortality more acutely as this age group is more vulnerable [Palloni (1981)]. Such community development factors are established as very deficient in Pakistan, and in particular in the rural areas. In general, the nature of development has neglected community development as can be seen for instance the rises in per capita income experienced which rank it in the middle income level countries when only 20 percent of its population has access to sanitation services and only 40 percent has access to safe drinking water.

Once more at the societal level the experience of certain settings in South Asia where fertility and child mortality have both declined, such as Matlab in Bangladesh, and some Southern States of India like Karnataka and Kerala and Sri Lanka, demonstrates that demographic change can occur in the absence of any major development efforts. This observation has lead many to argue that other factors may be more important in bringing down fertility and child mortality than population programmes and raising per capita incomes. The case of Kerala in India and that of West Bengal have been compared due to their similarities in having a comparable per capita income, experience with Communist Governments and considerably higher education rates than other Indian states, and yet the former has much higher rates of child survival. This is argued to be due to a historical tradition of encouraging a broad based educational effort for males and females particularly at the primary level and also the greater awareness of the populace of their 'rights' to access to health care [Nag (1989)]. Thus factors such as female autonomy [Caldwell (1986)], the greater provision of education (particularly amongst women) and more egalitarian income distribution [Nag (1989)] may be more important than economic development alone.

The effects of economic factors on child mortality in Pakistan are less unequivocally proven as compared to the reductive effects on child mortality of parental education, particularly mothers' education [Martin *et al.* (1983); Sathar and Kazi (1987)]. What is not clear is how even a few years schooling is associated with much lower risks of child mortality. Owing to the very low proportions of women who possess any schooling at all in Pakistan, usually those who do are expected to be selective of certain other features such as belonging to homes where education for girls was valued at all, living in the vicinity of a school, etc. The status of women with even a year or two of schooling is thus expected to be higher than those with no education. Though it is not clear whether it is education *per se* or this selectivity effect which leads to reduced child mortality, the argument has been made that the effect of female education operates through increased autonomy, particularly allowing women to assert themselves in the context of their kin [Caldwell *et al.* (1982)] and through greater efficacy in utilising health services where

they are available [Sathar (1987)]. Notwithstanding the reasons or the routes whereby female education influences child mortality, they are likely to be very similar to those found to be leading to sharply lower fertility amongst educated women. Thus the lack of pervasiveness of female education and the dearth of educated mothers is definitely a hindrance both in improving the chances of child survival and in reducing fertility levels.

Sex differentials in child mortality found in Pakistan as in the rest of South Asia lead to better chances of male children's survival than female children (excepting at the neonatal period). There may be a case in point whereby families may be deliberately allocating greater proportions of health care, food, attention and love on male children in order to maximise the number of living sons. It has been established in India and in Pakistan that the second daughter may experience even greater neglect than her older sister, further supporting the claim that this sex differential is an outcome of deliberate behaviour on the part of parents based on strong cultural preference for sons [DasGupta (1987); Sathar (1987)]. High fertility in South Asia is also attributed, to a considerable extent, to the strong desire for at least one or more living sons. Thus one of the roots of both high fertility and higher child mortality amongst girls lies to a large extent in the poor position of South Asian women and the lower worth of females. This factor has been recently cited as a definitive hindrance in demographic change in South Asia [Sathar *et al.* (1988)]. In fact it has been said that family planning in this region would be more effective if someone were to invent not a better contraceptive pill but a pill which could determine the sex of a child!

## PROBABLE IMPACTS OF CHANGING FERTILITY PATTERNS ON CHILD SURVIVAL

### Changes in Childbearing Patterns

*A priori* the expectation will be that fertility decline will be caused by greater contraceptive use concurrent with longer spacing between children leading to a curtailment of family size. Although this may be the case in the longer term future, the more short term fertility changes which seem to be underway are (a) the decline in the degree and length of breast feeding and (b) the curtailment of family size through the prevention of higher order births and (c) the delay in the onset of childbearing due to a rise in the female age at marriage. We will begin then by examining the likely impacts of these changes on child survival.

The decline in breastfeeding, both in the proportion of children ever breastfed and in the median length of breastfeeding have been noted in most developing countries. It is noteworthy that a decline in the median length of breastfeeding of

three to four months was recorded in Pakistan in the period 1975 and 1979, with a greater pace of decline in urban areas [Khan (1991)]. Though the evidence is tentative due to problems of measurement, it seems that this downward trend in breastfeeding is continuing (Table 1). This trend, in the absence of any other compensating behaviour (such as increased contraceptive use), is likely to lead to shorter birth spacing and increasing risks of infant and particularly child mortality. Infact, the breakdown of so-called "traditional" behaviour such as the observance of postpartum taboos, long periods of breastfeeding etc. have been observed to be leading to higher levels of fertility in many developing countries [Dyson (1988)]. Such increases in fertility, however short-lived, can easily lead to higher infant-child mortality also as shorter periods of breast feeding and earlier weaning expose more children to infections and, women to more frequent pregnancies.

Table 1

*Changes in Breastfeeding Patterns 1975-1991*

	Pakistan Fertility Survey 1975	Population Labour Force and Migration Survey 1979	Pakistan Contracep- tive Pre- valence Survey 1985	Pakistan Demogra- phic and Health Survey 1991
Mean Length of Breastfeeding	17.1	14.6	15.0	10.9
Population of Children Ever Breastfed	98	95	98	96

*Source:* 1. Pakistan Fertility Survey 1975.  
 2. [Khan (1991)].  
 3. Pakistan Contraceptive Prevalence Survey 1984-85 (Estimated from Table XI.3).  
 4. Estimated indirectly from median length of infecundability 7.6 months, PDHS 1990-91.

Once more it needs to be pointed out that this is the likely effect in the absence of any other compensatory effects. The outcome in terms of both fertility levels and child mortality will depend more critically on how various demographic factors interact with one another. For instance since there is some compensatory rise in contraceptive use seen in the PDHS 1991 (a rise in the current use of contraceptives from 6 percent to 11 percent) Table 2 then the debilitating effect on child survival of shorter periods of breastfeeding might be somewhat negated. Further, it makes a critical difference whether it is urban educated women for instance who are reducing their length of breastfeeding and switching over to bottle milk as they can

Table 2

*Age Patterns in Contraceptive Use Among Currently Married Women*

	PFS <sup>1</sup> 1975	PCPS <sup>2</sup> 1985	PDHS <sup>3</sup> 1991
<b>Ages</b>			
< 20	0	1.4	2.6
20-24	3	4.4	6.3
25-29	7	7.8	9.6
30-34	8	11.9	13.4
35-39	11	12.4	20.4
40-44	8	12.2	15.8
45-49	7	13.1	11.8
<b>Total</b>	<b>6</b>	<b>9.1</b>	<b>11.9</b>

Sources: 1. Pakistan Fertility Survey : First Report (Table 4.4.2).

2. Pakistan Contraceptive Prevalence Survey (Table VIII.10).

3. Pakistan Demographic and Health Survey 1991. (Pregnant women are included).

well make up for this by being more vigilant about avoiding their babies infections and dealing with their children's health care than rural uneducated women whose children's survival will suffer more acutely from such a shift in behaviour. The decline in breastfeeding, however, seems to be occurring across all groups [Khan (1991)].

The curtailment of family size through the prevention of higher order births, is a much likelier trend than the deliberate spacing of births. This is supported through the contraceptive use figures for Pakistan which show family planning acceptors to be dominated by those who have 'completed' their family size i.e. women older than 35. (See Table 3). Also the preference for sterilization as a method of contraception confirms this trend as do the figures from the PDHS 1991 which show that contraceptive use rises notably only once a woman has already had 4 or more children.

The population programme in Pakistan has in the past laid emphasis on the use of terminal methods rather than spacing methods which have gained popularity only recently. This trend combined with the rising age at marriage of females will probably mean delays in the start of childbearing and also an earlier cut off at lower parities than seen presently. Already such a trend can be seen in major urban areas in Pakistan where fertility patterns have begun to change [Sathar and Akhtar

Table 3

*Age Specific Fertility Rates For 1975-1991*

	1970-75	1975-91	Ratio of Rates in 1991-1975
15-19	.131	.087	.66
20-24	.275	.236	.86
25-29	.315	.277	.88
30-34	.259	.234	.90
35-39	.188	.152	.81
40-44	.077	.074	.96
45-49	.011	.042	3.82
Total Fertility Rate	6.3	5.5	.87

Source: Pakistan Demographic and Health Survey 1990-91; Pakistan Fertility Survey 1975.

(1988)]. The PDHS 1991 once again shows that the age at marriage of females is continuing to rise and accordingly the number of births occurring to women aged 15-19 has declined substantially. Thus it would appear that changing patterns of fertility are likely to lead to the concentration of child bearing at safe ages and at safer parities thereby leading to reduced risks of child mortality (see Table 4). However, it is disconcerting to note the substantial rise in the ASFR at ages 45-49 seen in the PDHS which somewhat contradicts this claim. Also in Table 4 there is an indication that despite the rise in age at marriage, the mean

Table 4

*Mean Number of Children Ever Born by Current Age of Mother 1975-1991*

	PFS 1975	PDHS 1991	Ratio of Means 1991-1975
<20	0.6	0.7	1.17
20-24	1.9	1.6	.84
25-29	3.4	3.1	.91
30-34	5.1	4.5	.88
35-39	6.2	5.6	.90
40-44	7.2	6.4	.89
45-49	7.1	6.6	.93
All	4.3	4.1	.95
Number of Cases	4949	8167	

Source: Pakistan Demographic and Health Survey 1990-91; Pakistan Fertility Survey 1975.



number of births to women aged 15–19 are 17 percent higher than they were in 1975.

### Changes in the Value of Children

Changing fertility patterns presume an alteration in the calculus of the demand for children and also expectations from them. A shift is expected in the roles of children from being early producers and aides to their parents, whether in enhancing family income or in providing additional hands with housework or in agricultural work, towards their schooling and general investment in the future generation. When there is a switch to fewer children as a result of increasingly 'deliberate' behaviour on the part of parents to control family size, then it is expected that parents will devote more care to their health and upbringing as presumably these fewer children will be more precious. This change will necessarily lead to better chances of child survival.

Similarly, if indeed sex differentials in child mortality, found to be peculiar to the South Asian region, are an outcome of deliberate behaviour on the part of parents then changes in fertility desires which orient parents to be less discriminatory towards the sex composition of families, will necessarily eliminate to a large extent excess female child mortality which is a direct outcome of the lesser preference for daughters. Unfortunately no such change is yet visible from the data available from the PCPS 1984 or the PDHS 1991 and the mean desired family size continues to be the same as in 1975. Further the evidence for a continuing strong preference for sons continues to persist [Manzoor *et al.* (1991)].

### Changes in the Status of Women

A major change can be expected in terms of the 'freeing' of mothers' time from childbearing if they have fewer pregnancies. Particularly if the fewer pregnancies are in quick succession after a later marriage as the time spent in childbearing and child-rearing is likely to be reduced. This is one way in which women's status is likely to improve as emphasis would change away from the importance of the maternal role as the sole source of status to extra-familial roles. One particular change expected is that more women will take up employment and also their chances of receiving education will be enhanced as their roles move away from the current stereo-typed ones of being primarily mothers and wives. There is considerable evidence that mothers in 1991 are more likely to be educated and to work outside the home (at least in urban areas) than was the case in the 1970s.

Of course if women's status were to improve in Pakistan as a result of this likely expansion in roles this in turn will improve the chances of survival of their

children as it has been proven that women of higher status, through greater exposure to confines outside the homestead, greater mobility outside the home etc. have reductive impacts on infant-child mortality [Mason (1984)]. However, the evidence from Pakistan in this regard is mixed: using data from Karachi, it was found that women working in modern sector employment had much lower infant-child mortality than those in informal sector employment presumably because these women had greater exposure to outside influences but also because they were more educated [Sathar and Kazi (1990)]. In the same study, however, it was also found that children of women from poor families who did income generation activities at home experienced lower mortality than children of women doing equivalent work outside the home. This was presumably due to the trade off between leaving children to less careful mother surrogates such as older children rather than the closer supervision of the mother herself when she was working at home. In a study done in Delhi India it was also found that the type of employment women undertook was important in determining the impact on children's mortality: for instance the domestic servants who worked in fairly well off homes and were exposed to 'modern' influences were thereby unexpectedly more capable of undertaking changes in their reproductive behaviour [Basu and Sundar (1988)].

In the 1991 PDHS it is interesting to note that mothers with primary or more education were manifold more likely to have received tetanus toxoid injections themselves and were also significantly more likely to have given all the vaccinations to their children aged 12-23 months (Table 5).

Table 5

*Preventive Health Care Measures taken by Mothers by  
their Level of Education PDHS 1991*

	Proportion of Mothers Who have Received Tetanus Toxoid Injection	Proportion of Children Aged 12-23 Months Who Received All Vaccination
<b>Education of Mother</b>		
No Education	22.3	32.2
Primary	44.6	42.5
Middle	65.2	58.4
Secondary +	63.8	58.7

Source: Tables 11 and 13 in PDHS 1990-91 Preliminary Report.

## POLICY ISSUESD

The most obvious lesson that emerges from the Pakistan experience is that there are severe detrimental costs of the very meager resources expended on the social sectors as compared to other sector which manifest themselves through high fertility and infant child mortality. The short term goal of "development" at the cost of the social sectors has limited potential when the quality of life indicators related to human resources such as child mortality do not decline automatically as was expected on the basis of the experience of the South East Asian countries or Europe. Here Pakistan ought to be forewarned to avoid the experience of Sub-Saharan Africa where due to the current economic crises faced by most of the African nations, the economic stabilisation packages prescribed are severely affecting the health and education sectors. These Governments have had to sacrifice expenditure on social sectors which would erode advances made in bringing down child mortality rates in a very short time and despite economic hardships faced by these nations. Such 'structural adjustment' is just beginning to affect Pakistan and might be a serious threat in the future against improvements in child survival.

Also a "compartmentalised" approach to the provision of family planning services and more recently towards child health (for example the Expanded Immunisation Programmes) may have limited value in achieving the respective goals of lowering fertility and child mortality. In this regard introducing availability of contraceptives and health care in an intensive and concerted way without changing the 'development' levels of a particular community as was the case in Matlab in Bangladesh has some lessons to offer. Though this experiment has met with considerable success in a setting like Bangladesh, a plateau has recently been identified in terms of demographic change where perhaps more fundamental changes such as those of spread of education, provision of jobs etc. may be necessary for further reductions in fertility and child mortality [Duza and Nag (1988)]. Improving the supply of contraceptives, providing health care particularly immunization facilities, will undoubtedly raise contraceptive use and bring down child mortality but considerable linked efforts are needed in education, raising women's status and employment opportunities for this to be a sustainable trend.

A strong emphasis on promoting education particularly for females up to the primary level is being suggested. Policies with the direct aim to reduce child survival such as the promotion of breastfeeding, especially where reverse trends have started already, and to increase spacing between births may not be very effective in the longer run. Similarly the effects of intensive immunisation campaigns may be impressive initially but may only be short term solutions because most uneducated mothers do not regularly immunise all their children and often

do not fully realise the importance of successive inoculations. Thus the effect of increasing education are not only greater in terms of enhancing child survival, but are also likelier to be longer lasting.

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**Comments on  
“Child Survival and Changing Fertility  
Patterns in Pakistan”**

The persistently high fertility level in Pakistan and its very slow decline over-time has stimulated the author to examine the interaction between child mortality and fertility. Reviewing past research, the author concludes that the effect of infant and child mortality on subsequent fertility, as an insurance effect, is inconclusive. However, the author has tried to examine, in the case of Pakistan, the effect of high fertility or changing pattern of fertility on child mortality. In this regard it is postulated that a large family size is associated with close spacing and greater concentration of children of ages under 5 or 10. Lack of physical resources and high risk of infection coupled with inadequate parental attention and care leads to high infant and child mortality. Such positive association between high fertility and mortality is found to occur in low income families with minimal parental education. Citing examples from literature the author argues that institutional and community services factors like sanitation, sewerage and potable water exert a noticeable effect on child mortality. Further she argues that demographic change can occur even in the absence of any major development effort. This change has occurred mainly in Karnataka, Kerala and Sri Lanka where a higher level of education and greater provision of educational opportunity coupled with more equal distribution of income exist. One wonders whether educational achievement and creation of more equitable distribution of income is not an outcome of development.

On the other hand, the author considers parental education, particularly mother's education, as an economic factor and argues that the depressing effect of female education on child mortality results mainly from their increased autonomy and greater efficacy in utilising health services. Higher female child mortality in Pakistan from the author's point of view is attributable to the greater allocation of health care, food, attention and love for male children. It is further argued that both high fertility and higher child mortality lies to a great extent in the poor position of South Asian women and the lower worth of females. It is however true that the preference for more sons over daughters is prevalent in Pakistani Society but one wonders whether parents really care so much for sons at the expense of daughters.

For purposes of examining the effect of fertility on child mortality the author argues that both the proportion of women breastfed and median length of breastfeeding are on the decline in Pakistan and a very small increase in contraceptive use is not likely to increase birth spacing and risk of infant and child

mortality. The author enquires whether this pattern of breastfeeding will occur more in urban areas and does not suggest measures for remedying the situation. Further the author argues that contraceptive surgery cases lead to the termination of higher order of births and, consequently, the lowering of child mortality. Similarly, delayed marriages or increase in age-at-marriage would lead to lower infant mortality. She argues that the effect of age-at-marriage and use of surgical methods would lead to the concentration of child bearing at safe ages and at safer parities thereby leading to reduced risks of child mortality. The author goes on to emphasise that these changing patterns of fertility described above will bring about a behavioural change in the demand for children and a lesser preference of gender. In the view of the author these changing patterns of fertility will also bring about a change in the status of women thereby further reducing child mortality and fertility.

What emerges from this study is that two variables, mainly age-at-marriage and contraceptive surgery, are the most important determinants of the changing patterns of fertility in Pakistan which could bring about changes both in fertility and child mortality. It may be pointed out that singulate age-at-marriage gives a higher value than the actual age-at-marriage. Out of 115 million people, 80 million reside in rural areas where age-at marriage is very low and where programme efforts have not been able to penetrate to any extent. How would age at marriage and programme efforts be able to bring about a behavioural change in fertility attitudes in rural areas is the question. Such a simple explanation of fertility change which is an outcome of a host of interacting socio-economic, cultural, social and programme variables does not seem appropriate for a fatalistic society like Pakistan. In fact, there is a need for a more appropriate fertility model at the micro level which could throw more light on all the interacting factors mentioned above.

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