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**Socioeconomic and cultural aspects
of marriage and fertility
in urban Pakistan**

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**EAST-WEST CENTER
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PREFACE

Thanks are due to Drs. J. Mayone Stycos, Peter C. Smith, and Samuel H. Preston for their valuable comments on an earlier draft of this paper. Support for the publication of this paper was provided by the Office of Population, Agency for International Development.

ABSTRACT Using data from the 1968–69 Pakistan National Impact Survey and multiple classification analysis, this paper examines the relationship between age at marriage and fertility among 1,114 currently married women 15–44 years of age who were living in urban areas at the time of the survey. Mean age at marriage reported by the sample was very low (16 years), although among younger women it was somewhat higher (17 and a half). Average cumulative fertility among older women (those aged 35–44 when interviewed) was 6.7 births, but it was 29 percent lower among women who had married at age 19 or later than among those who had married at age 16 or earlier, even though women who had postponed marriage had a faster tempo of childbearing. Cumulative fertility differentials were found among socioeconomic groups, ethnic groups, and residential (metropolitan versus nonmetropolitan) groups who married at younger and older ages.

Duration of marriage and first pregnancy interval proved to be important predictors of the inverse relationship between age at marriage and cumulative fertility. With duration of marriage controlled, cumulative fertility was 14 percent lower among late-marrying women than among those who had married early; with first pregnancy interval controlled, cumulative fertility was 32 percent lower among late-marrying women.

Raising the mean age at marriage for Pakistani women to 19 from the current legal age of 16 would have beneficial social, as well as demographic, effects. But because the early marriage age appears to be related, at least among some ethnic groups, to the economic liability of daughters, increasing the legal age at marriage must be accompanied by fundamental changes in women's roles.

The fertility of a population is determined by a number of interrelated social, economic, and demographic factors. Especially in areas where fertility is high, female age at marriage has important implications for the study of fertility, because the length of the female reproductive period is largely determined by the age at which a woman enters marital union. Coale and Tye (1961) have pointed out that early marriage could be one of the major determinants of fertility; they suggest, however, that the fecundity of women married at a very early age may be impaired by premature pregnancy. Malthus recognized the importance

of the age at which women marry and suggested that delayed marriage was one important way to reduce population growth (Leasure, 1963). Davis (1955) identified certain values prevalent in non-Western societies, such as universality of marriage and emphasis on early marriage for women, along with the joint family system, as the major factors contributing to higher fertility. Though no significant differences in fertility have been reported among women living in joint or nuclear families in Pakistan (Karim, 1974), it appears quite likely that a low average age at marriage may account in part for Pakistan's high fertility. This paper attempts to relate the fertility of urban Pakistani women to their ages at marriage and to identify sociocultural and economic factors influencing this relationship. The religious support given to universal and early marriage in Pakistan, as well as such social values as segregation of the sexes, strong taboos against premarital sex, and a large-family norm may contribute to the low age at marriage as well as to the high fertility of women in Pakistan.

Historically, a well-established inverse relationship between a woman's age at marriage and her fertility has existed throughout the world. In the recent past, however, this association seems to have become substantially weaker in the developed countries. For example, Glass and Grebenik (1954) have emphasized the decreasing importance of age at marriage in predicting fertility in Britain. They argue that age at marriage and fertility are not tightly linked for the more recently married women owing to their adoption of birth control. But Busfield (1972) has shown that these differences persist even in recent marriage cohorts. Her study explores a number of reasons for this persistence.

Differences in fertility by age at marriage have remained relatively large in societies where marriage is universal, average age at marriage is low, and the use of contraception is not very common. Numerous studies done in India have demonstrated an inverse relationship between age at marriage and fertility. Driver (1963), for example, relating the high fertility of central Indian women to their low age at marriage, reported that, at the completion of their childbearing period, women who married at age 18 or later were 30 percent less fertile than those who married before age 14. On the basis of a set of calculations using the stable population concept, Agarwala (1967) suggested that if female age at marriage in India were raised from 15.6 years to 19.3 years on the average, there would be a decline of 27 percent in the birth rate. Malakar (1972) reported a consistent inverse relationship between age at marriage and fertility in India based on different fer-

tility measures. Although he indicated that no significant decline in fertility would result from raising age at marriage from 15 to 17 years, a substantial decline would occur, if it were raised to 19 or 21 years. Talwar and Seal (1974) reached results somewhat similar to those of Malakar. But they suggested that decline in fertility resulting from an increase in age at marriage might not be significant in the long run. On the other hand, Das (1967) did not find a significant impact of an increase in age at marriage on fertility and suggested the existence of a critical line below which the postponement of marriage does not have a bearing on completed family size.

The results of studies conducted elsewhere generally suggest a significant impact of female age at marriage on fertility. Leasure (1963), comparing Bolivian and Turkish data, showed that a substantial decline in fertility would result if average age at marriage were increased to 27 or 28 years in those countries. Siffman (1967) noted high marital fertility rates of 8.5 and 9.1 among women in Armenia and Azerbaijan in the Soviet Union prior to the Second World War; and he related these rates to a low average age at marriage of about 17 years. Kim et al. (1974) considered age at marriage as the most important factor in explaining fertility decline in Korea during the past two decades among currently married women 40–49 years old. Palmore and Marzuki (1969), using West Malaysian survey data, suggested that early marriage leads to higher cumulative fertility whereas the nonexposure associated with multiple marriage tends to retard completed family size. They found that fertility, as well as age-at-marriage differentials by rural-urban residence, ethnicity, and education of women, shows a clear impact of age at marriage on completed family size.

In Pakistan, despite the low average age at marriage and high fertility, little research has been done on the relationship between these two variables. Using available census data on marital status by age, Sadiq (1965) prepared estimates of singulate mean age at marriage (SMAM). He reported an increase of over four years in SMAM during the past half century, as shown in Table 1. A sudden increase in SMAM in the 1940s was mainly the result of social and political disturbances during the decade. But the increase in the 1960s seems to have been due to economic and social changes. (For a detailed discussion of trends in nuptiality in Pakistan see Karim, 1979.)

On the basis of 1961 Census data, Ahmed (1969) estimated the effect on the crude birth rate of an assumed increase in the minimum age at marriage for females in Pakistan from the minimum legal age at marriage of 16 years to 20 years. He concluded that such an increase

TABLE 1 Singulate mean age at marriage (SMAM):
Pakistan, 1921-72

| Year | SMAM |
|------|------|
| 1921 | 15.8 |
| 1931 | 15.7 |
| 1941 | 16.4 |
| 1951 | 17.9 |
| 1961 | 17.6 |
| 1968 | 19.6 |
| 1972 | 20.0 |

SOURCES: 1921-61: Sadiq (1965), based on Population Censuses of Pakistan. 1968: Pakistan, Statistical Division (1973). 1972: Pakistan, Census Organization (1974).

would have resulted in a maximum fertility decline of 12 percent between 1961 and 1971. Furthermore, he suggested that the crude birth rate would show an upward trend between 1976 and 1991 and would decline afterward as small-sized cohorts resulting from the increase in age at marriage began reproduction. Ahmed, however, assumed a *sudden* shift in age at marriage from 16 to 20 years; therefore, his results may not be entirely realistic, because changes in age at marriage in societies like Pakistan occur gradually. In a more recent study, De Tray (1977) has pointed out some of the problems associated with studying the relationship between age at marriage and fertility in Pakistan. Nevertheless, his regression results indicate a decline of 8 percent in completed fertility from raising the average age at marriage from 15.2 to 19.2 years.

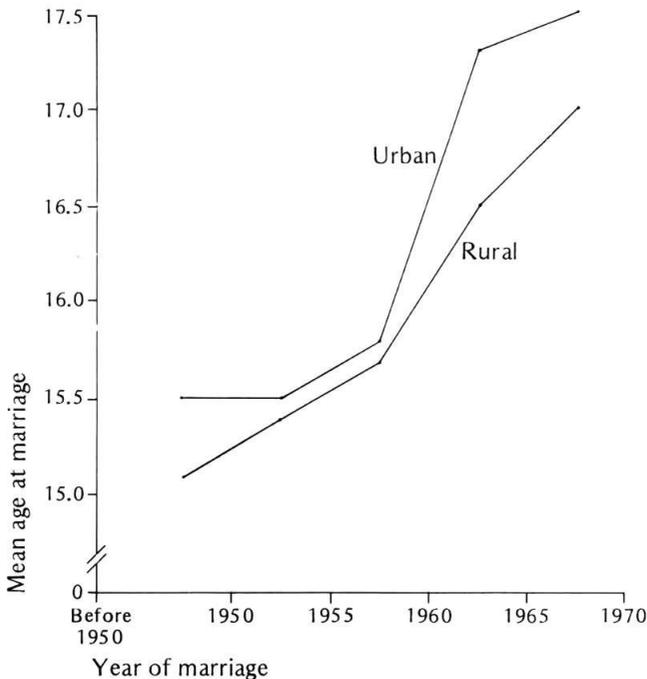
PRESENT STUDY

A review of the literature strongly suggests that the age at marriage has a direct bearing on fertility. Most of the studies dealing with the age-at-marriage and fertility relationship have, however, ignored the social and cultural aspects of the relationship. They are usually "model" oriented, explaining the magnitude of expected decline in overall fertility with increases in age at marriage. They have largely failed to mention that a shift in age at marriage is an important cultural change, a change in traditional behavior relating to one of the most fundamental institutions in the society. It is likely to be indicative of other changes in attitudes toward marriage, as well as reproductive behavior.

A rise in age at marriage is one of the major factors that may cause

a decline in fertility. This is especially true in societies like Pakistan, where not only are large-family norms prevalent but also contraceptive use is still very limited (Pakistan Population Planning Council, 1976). Age at marriage in Pakistan, as in many other modernizing societies, has shown an upward trend during the past decades. This increase is especially notable in urban areas (Smith and Karim, 1978). Figure 1 shows an increase of about two years in age at marriage for women married recently (four years prior to the survey) compared with those married for more than 20 years. It appears likely that, as in other countries, women who postpone their marriage for a few years will tend to have lower fertility.

FIGURE 1 Mean age at marriage by year of marriage, among currently married women: Pakistan, 1968–69



SOURCE: Pakistan, Family Planning Council (n.d.).

Data analyzed here are from the National Impact Survey, conducted in 1968–69, which represented the first attempt in Pakistan to collect social and demographic data at the national level. The survey covered about 2,500 households. Interviews were conducted with 2,910 currently married women under 45 years of age. (See Pakistan, Family Planning Council, n.d., for details.) Care was taken to record accurately the ages of women at the time they started living with their husbands instead of the ages at which they were married.¹ Nevertheless, the estimates of exact age at marriage may still have been biased by somewhat inaccurate age reporting as a result of memory lapses, especially among older women. Similarly, there were recall problems with answers concerning the total number of live births. As a result, some underreporting of cumulative fertility among older women was likely.

Because of the possibility that reports of current age, age at marriage, and number of live births were more accurate among urban than among rural women, only data for urban residents are analyzed here. Urban women are frequently able to relate vital events to some well-known and important occurrence in their lives owing to their greater exposure to the mass media and their relatively higher literacy. They may therefore provide more reliable information than their rural counterparts. The sample for this study consists of 1,114 currently married women of ages 15–44 who had married only once and were living in urban areas of Pakistan. Socioeconomic and demographic characteristics of the women selected for study are current age, level of education, husband's occupation, type of residence (metropolitan or nonmetropolitan), and mother tongue (as a proxy for ethnicity) because they are considered to be most likely to affect the relationship between age at marriage and cumulative fertility. In a multiple classification analysis, duration of marriage and first pregnancy interval are used as covariates to determine their effects on the relationship between age at marriage and cumulative fertility within three age groups.

FINDINGS AND DISCUSSION

Relationship of fertility to demographic and socioeconomic characteristics

An inverse relationship between age at marriage and fertility is indicated by the cumulative fertility measures in Tables 2 and 3, though

1 Respondents were asked: "What was your age when you first lived with your husband?" and number of years was recorded. Interviewers were instructed to probe for an estimate of each respondent's age using a date/event card and to specify the basis of each estimate.

TABLE 2 Age-specific and total fertility rates, mean number of live births, and mean number of pregnancies, by current age of women: urban Pakistan, 1968-69

| Index of fertility by age at marriage | Current age of women | | | | | | All ages |
|--|----------------------|-------|-------|-------|-------|-------|----------|
| | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | |
| Age-specific fertility rate | | | | | | | |
| All ages at marriage | .268 | .395 | .322 | .253 | .181 | .095 | 269.3 |
| 16 or less | .281 | .402 | .337 | .281 | .179 | .103 | 272.1 |
| 17-18 | .250 | .420 | .200 | .225 | .192 | .046 | 248.8 |
| 19 or more | 0 | .359 | .337 | .200 | .190 | .111 | 281.9 |
| Mean number of live births | | | | | | | |
| All ages at marriage | .6 | 2.0 | 3.6 | 5.1 | 6.3 | 7.1 | 4.2 |
| 16 or less | .7 | 2.6 | 4.1 | 5.4 | 6.6 | 7.4 | 4.7 |
| 17-18 | .4 | 1.8 | 3.1 | 5.0 | 6.8 | 6.5 | 3.9 |
| 19 or more | 0 | 1.0 | 2.3 | 4.1 | 4.1 | 5.9 | 2.9 |
| Mean number of pregnancies | | | | | | | |
| All ages at marriage | .7 | 2.3 | 4.0 | 5.6 | 7.0 | 7.7 | 4.7 |
| 16 or less | .8 | 2.9 | 4.6 | 6.0 | 7.4 | 8.2 | 5.2 |
| 17-18 | .5 | 2.1 | 3.4 | 5.3 | 7.2 | 7.0 | 4.2 |
| 19 or more | 0 | 1.2 | 2.6 | 4.5 | 4.8 | 6.3 | 3.4 |
| Number of women | 112 | 215 | 273 | 201 | 187 | 126 | 1,114 |
| Percentage | 10.1 | 19.3 | 24.5 | 18.0 | 16.8 | 11.3 | 100.0 |

SOURCE: Pakistan, Family Planning Council (n.d.), for this and subsequent tables.

TABLE 3 Total marital fertility rate, mean number of live births, mean number of pregnancies, and mean first pregnancy interval, by age at marriage: Pakistan, 1968–69

| Fertility ratio (for specified current age groups) | Age at marriage | | | All ages |
|--|-----------------|-------|------------|----------|
| | 16 or less | 17–18 | 19 or more | |
| Marital total fertility rate (15–44) | 7.9 | 6.7 | 6.0 | 7.6 |
| Mean number of live births (40–44) | 7.4 | 6.5 | 5.9 | 7.1 |
| Mean number of pregnancies (40–44) | 8.2 | 7.0 | 6.3 | 7.7 |
| Mean interval between marriage and first conception, in months (15–44) | 19.7 | 13.3 | 9.6 | 16.7 |
| Number of women | 724 | 202 | 188 | 1,114 |
| Percentage | 65.0 | 18.1 | 16.9 | 100.0 |

the age-specific rates are irregular. An average of 1.5 additional live births or an average of 1.9 additional pregnancies was reported by women aged 40–44 who married at age 16 or earlier as compared with those married at age 19 or later (Table 2). Similarly, there was a difference of 1.9 in the total marital fertility rate between women who married earlier and those marrying at later ages (Table 3). The findings indicate a reduction of 20 percent in the number of live births (in the age group 40–44), 23 percent in total pregnancies (in the same age group), and 24 percent in the marital total fertility rate among women married at age 19 or later compared with those married by age 16. However, in accordance with earlier findings (Rele, 1962), women marrying later tended, on the average, to have shorter first pregnancy intervals, averaging 9.6 months compared with 19.7 months for those marrying earlier. This difference of 10.1 months may be due partly to secondary sterility associated with early age at marriage. Thus, although the women in the sample tended to follow the large-family norm prevalent in Pakistani society irrespective of their age at marriage, those marrying later eventually ended up with an average of 1.5 fewer children than women marrying earlier. As will be shown, this is largely a result of a shortening of their reproductive period by an average of three years due to later marriage.

Table 4 presents the mean number of live births for women by

selected demographic and socioeconomic characteristics within three broad age groups (15–24, 25–34, and 35–44 years) to allow for possible cohort effects. Age at marriage is shown to be an important predictor of fertility among women in each age group, and older women who reported marriage by age 16 show an excess of two live births over those married at age 19 or later. This finding suggests that, other things being equal, the average completed family size of the former group would have been 4.9 instead of 6.9 if their average age at marriage had been 19 instead of 16 years. In other words, those married at age 19 or later had 29 percent lower cumulative fertility than women married at age 16 or earlier. But women married at ages 17 and 18 had almost the same cumulative fertility as those married earlier, suggesting that age 19 may be a cutoff point in predicting fertility decline due to marriage delay.

As seen in Table 4, educational level influenced age at marriage and fertility. Women with more education who married at age 19 or later had, on the average, 2.7 fewer live births than those who married at age 16 or earlier and had three or less years of schooling. Similarly, women married to men in higher status occupations (professional and managerial) tended to be less fertile if married at a later age than if married earlier (the difference being 3.1 children). But wives of unskilled workers did not always have the highest cumulative fertility. This finding suggests that economic status has a complex influence on the cumulative fertility of older women, who tend to have the highest fertility.

Metropolitan versus nonmetropolitan residence may be one of the factors aiding changes in attitudes and thus leading to a higher mean age at marriage and to reductions in family size. Though women living in metropolitan areas reported higher cumulative fertility, those married at age 19 or later tended to have the lowest cumulative fertility: about two children fewer than the average woman and 2.7 fewer than their counterparts who married at age 16 or earlier.

Ethnic groups in Pakistan differ not only in the languages they speak; they also have their own traditions and subcultures, including different marriage practices and customs. Ethnic groups speaking Urdu and Punjabi are largely cosmopolitan and have lived for centuries close to Hindu (Indian) culture. Consequently, many of their traditions and customs are Hindu in origin. On the other hand, the Sindhi, Pushto, and Baluchi speaking populations are more traditional and closer to the Arab and Iranian cultures. Arabs entered the Indian subcontinent through Sind in the seventh century A.D., and the first foundation of

TABLE 4 Mean number of live births by age at marriage and selected characteristics: currently married women in urban Pakistan

| Age group and characteristics | Number of women (1) | Percentage of women (2) | Mean age at marriage (3) | Mean number of live births | | | Difference between mean number of live births for women married ≤ 16 and ≥ 19 $([5] - [7])^a$ | | |
|-------------------------------|------------------------|----------------------------|-----------------------------|----------------------------|--------------------------|--------------|---|-----|------------------|
| | | | | To all women (4) | To women married at age: | | (8) | (9) | |
| | | | | | ≤ 16 (5) | 17-18 (6) | | | ≥ 19 (7) |
| WOMEN 35-44 YEARS | 313 | 100.0 | 15.9 | 6.6 | 6.9 | 6.7 | 4.9 | 2.0 | 29.0 |
| Woman's education level | | | | | | | | | |
| ≤ 3 years of schooling | 268 | 85.6 | 15.7 | 6.8 | 7.0 | 6.8 | 5.2 | 1.8 | 25.7 |
| ≥ 4 years of schooling | 45 | 14.4 | 17.3 | 5.8 | 6.5 | 5.9 | 4.3 | 2.2 | 33.9 |
| Husband's occupation | | | | | | | | | |
| Unskilled | 81 | 29.5 | 15.9 | 7.0 | 7.1 | 6.4 | 7.0 | 0.1 | 1.4 |
| Clerical or skilled | 99 | 36.0 | 15.7 | 6.7 | 7.0 | 6.1 | 5.3 | 1.7 | 24.3 |
| Professional or managerial | 95 | 34.5 | 16.5 | 6.5 | 7.0 | 7.4 | 3.9 | 3.1 | 44.3 |
| Residence | | | | | | | | | |
| Nonmetropolitan | 229 | 73.2 | 15.7 | 6.5 | 6.7 | 6.5 | 5.1 | 1.6 | 23.9 |
| Metropolitan | 84 | 26.8 | 16.4 | 6.8 | 7.4 | 7.2 | 4.7 | 2.7 | 36.5 |
| Language | | | | | | | | | |
| Urdu | 98 | 31.6 | 15.6 | 6.9 | 7.1 | 6.9 | 5.1 | 2.0 | 28.2 |
| Punjabi | 147 | 47.4 | 15.9 | 6.8 | 7.2 | 6.2 | 4.6 | 2.6 | 36.1 |
| Sindhi, Pushto, Baluchi | 65 | 21.0 | 16.2 | 6.0 | 5.9 | 7.5 | 5.4 | 0.5 | 8.5 |
| WOMEN 25-34 YEARS | 474 | 100.0 | 16.4 | 4.2 | 4.6 | 4.0 | 3.0 | 1.6 | 34.8 |
| Woman's education level | | | | | | | | | |
| ≤ 3 years of schooling | 391 | 82.5 | 16.0 | 4.2 | 4.7 | 3.9 | 3.0 | 1.7 | 36.2 |
| ≥ 4 years of schooling | 83 | 17.5 | 17.9 | 4.1 | 4.9 | 4.4 | 3.2 | 1.7 | 34.7 |

| | | | | | | | | | |
|----------------------------|-----|-------|------|-----|-----|-----|-----|-----|------|
| Husband's occupation | | | | | | | | | |
| Unskilled | 125 | 28.9 | 15.7 | 4.3 | 4.8 | 3.6 | 2.1 | 2.7 | 62.8 |
| Clerical or skilled | 172 | 39.7 | 16.4 | 4.4 | 4.9 | 4.0 | 3.2 | 1.7 | 34.7 |
| Professional or managerial | 136 | 31.4 | 16.7 | 4.3 | 4.5 | 4.1 | 3.7 | 0.8 | 17.8 |
| Residence | | | | | | | | | |
| Nonmetropolitan | 346 | 73.0 | 16.4 | 4.2 | 4.6 | 3.9 | 3.0 | 1.6 | 34.8 |
| Metropolitan | 128 | 27.0 | 16.1 | 4.4 | 4.9 | 4.1 | 3.1 | 1.8 | 36.7 |
| Language | | | | | | | | | |
| Urdu | 153 | 32.3 | 16.1 | 4.4 | 5.0 | 3.7 | 3.0 | 2.0 | 30.0 |
| Punjabi | 234 | 49.5 | 16.5 | 4.3 | 4.8 | 4.2 | 3.0 | 1.8 | 37.5 |
| Sindhi, Pushto, Baluchi | 86 | 18.2 | 16.3 | 3.7 | 3.9 | 3.9 | 2.9 | 1.0 | 25.6 |
| WOMEN 15-19 YEARS | 327 | 100.0 | 16.1 | 1.5 | 1.8 | 1.4 | 0.9 | 0.9 | 50.0 |
| Woman's education level | | | | | | | | | |
| ≤3 years of schooling | 250 | 76.5 | 15.7 | 1.6 | 1.7 | 1.4 | 0.9 | 0.8 | 47.1 |
| ≥4 years of schooling | 77 | 23.5 | 17.6 | 1.4 | 2.0 | 1.4 | 0.9 | 1.1 | 55.7 |
| Husband's occupation | | | | | | | | | |
| Unskilled | 88 | 29.7 | 15.5 | 1.5 | 1.5 | 1.8 | 1.1 | 0.4 | 26.7 |
| Clerical or skilled | 126 | 42.6 | 16.2 | 1.6 | 1.9 | 1.3 | 1.0 | 0.9 | 47.4 |
| Professional or managerial | 82 | 27.7 | 16.5 | 1.6 | 2.0 | 1.3 | 1.1 | 0.9 | 45.0 |
| Residence | | | | | | | | | |
| Nonmetropolitan | 257 | 78.6 | 16.1 | 1.5 | 1.8 | 1.5 | 0.8 | 1.0 | 55.6 |
| Metropolitan | 70 | 21.4 | 16.2 | 1.5 | 1.7 | 1.1 | 1.3 | 0.4 | 23.5 |
| Language | | | | | | | | | |
| Urdu | 101 | 31.2 | 15.8 | 1.6 | 1.9 | 1.2 | 0.8 | 0.9 | 59.7 |
| Punjabi | 134 | 41.3 | 16.9 | 1.6 | 1.9 | 1.5 | 1.1 | 0.8 | 42.1 |
| Sindhi, Pushto, Baluchi | 89 | 27.5 | 15.5 | 1.3 | 1.4 | 1.4 | 0.2 | 1.2 | 85.7 |

NOTE: 110 women either failed to report their husband's occupation or reported him to be a farmer. They are therefore not included in the analysis of husband's occupation as an independent variable.

a Percentage difference shown in col. 9 equals col. 8 divided by col. 5 X 100.

Arab and Islamic culture was laid there. Pushto and Baluchi speaking areas border on Iranian and Afghani areas, and people living there trace their origins to central Asia. One marriage custom widely practiced by the Sindhi, Pushto, and Baluchi groups is payment of a bride price. At the time of marriage negotiations, a bridegroom's family has to offer a bride price to the family of the bride as a security against divorce. On the other hand, among the Urdu and Punjabi speaking populations, who have a long affiliation and common ancestry with Hindus, it is customary for the bride to bring a dowry to the marriage from her family. This contrast in marriage practices may have a strong bearing on age at marriage and in turn on fertility within each marriage cohort.

Though the differences in the mean age at marriage among the three ethnic groups do not seem to be great, a somewhat lower cumulative fertility is noticed among those speaking Sindhi, Pushto, and Baluchi. Little difference was reported between women married at earlier and at later ages, though the very high fertility of those married at age 17 or 18 is quite conspicuous. Punjabi speaking women reported 2.6 fewer live births if married at age 19 or later than if married at the earliest ages. Among Urdu speaking women, those marrying at age 19 or later also reported lower fertility than those marrying at age 16 and earlier. A similar trend was observed for the youngest cohort in this language group.

Multiple classification analysis

So far we have looked at the differences in the mean number of live births among women in three age categories, married at different ages and having certain socioeconomic characteristics. In what follows, a closer look is taken at these relationships with the help of multiple classification analysis (MCA). Two demographic variables are introduced as covariates. An important aspect of the MCA technique is its capacity to show the effect of an independent variable, or predictor, on the dependent variable both before and after the effects of selected other variables, used as covariates, are taken into account. One useful statistic is the adjusted deviation from the grand mean (or the adjusted mean) for each category of the predictor. The adjusted means are estimates of what the mean levels of the dependent variable would have been if the subjects under study had been equally distributed according to the control variables (Andrews et al., 1973). Cumulative fertility is a function not only of the current age of a woman and her age at marriage, but also of the span of her reproductive period. In the analy-

sis that follows the reproductive span is indexed by duration of marriage and first pregnancy interval. These variables are themselves only weakly correlated (see Table 5).

TABLE 5 Correlation matrix of socioeconomic and demographic characteristics, for currently married women aged 15–44 in urban Pakistan: 1968–69

| Variable | (9) | (8) | (7) | (6) | (5) | (4) | (3) | (2) | (1) |
|----------------------------|------|------|------|------|------|------|-----|------|-----|
| 1 Age at marriage | .32 | .13 | .08 | .01 | -.24 | -.31 | .02 | -.21 | |
| 2 Number of live births | -.09 | 0 | -.09 | .05 | .01 | .73 | .70 | | |
| 3 Current age | -.06 | .03 | -.04 | .06 | .19 | .92 | | | |
| 4 Duration of marriage | -.16 | -.02 | -.07 | .06 | .27 | | | | |
| 5 First pregnancy interval | -.17 | -.10 | -.06 | -.04 | | | | | |
| 6 Residence | .11 | -.01 | -.19 | | | | | | |
| 7 Linguistic group | -.02 | .01 | | | | | | | |
| 8 Husband's occupation | .24 | | | | | | | | |
| 9 Woman's education | | | | | | | | | |

Table 6 indicates the clear downward trend in fertility with age at marriage among younger women (col. 4). But when duration of marriage is introduced as a covariate in the MCA analysis (col. 5), the fertility difference between late-marrying and all women is reduced by one live birth. Similar findings are reported for the other two groups of younger women. On the other hand, the effect of controlling on the first pregnancy interval is to increase the age-at-marriage differential (col. 6). When the additive effects of duration of marriage and first pregnancy interval are considered simultaneously, 15 percent of the variance in number of live births is explained. This finding reflects the fact that there is some association between the two variables and a corresponding overlap in explanatory power, because R^2 with separate control for duration of marriage (.095) and for first pregnancy interval (.105) sum to a higher value than the combined R^2 when one takes into account both variables simultaneously. It may easily be seen that duration of marriage is an important factor in explaining the relationship between fertility and age at marriage, but first pregnancy interval does not affect this relationship to a great extent. However, duration of marriage and the first pregnancy interval are most important for the early years of childbearing, as shown in the third panel of Table 6.

Using duration of marriage and first pregnancy interval as constants,

TABLE 6 Multiple classification analysis of number of live births, using age at marriage as a predictor and duration of marriage (A) and first pregnancy interval (B) as covariates, for three age groups of currently married women in urban Pakistan, 1968-69

| Current age and age at marriage | Number (1) | Percentage (2) | Mean number of live births (grand or category mean) (3) | Unadjusted deviation from grand mean (4) | Deviation adjusted for: | | |
|---------------------------------|------------|----------------|---|--|-------------------------|---------|---------------|
| | | | | | (A) (5) | (B) (6) | (A) + (B) (7) |
| Current age 35-44 | 313 | 103.0 | 6.62 | | | | |
| Age at marriage | | | | | | | |
| 16 or less | 227 | 75.5 | 6.90 | .28 | .09 | .34 | .15 |
| 17-18 | 47 | 15.0 | 6.66 | .04 | .21 | -.11 | .06 |
| 19 or more | 39 | 12.5 | 4.92 | -1.70 | -.75 | -1.87 | -.93 |
| Eta or beta | | | | .22 | .10 | .24 | .12 |
| R ² | | | | .048 | .095 | .105 | .151 |
| Current age 25-34 | 474 | 99.9 | 4.23 | | | | |
| Age at marriage | | | | | | | |
| 16 or less | 296 | 62.4 | 4.68 | .45 | -.10 | .53 | -.04 |
| 17-18 | 85 | 17.9 | 3.97 | -.26 | .04 | -.33 | -.02 |
| 19 or more | 93 | 19.6 | 3.03 | -1.20 | .27 | -1.40 | .14 |
| Eta or beta | | | | .30 | .07 | .36 | .03 |
| R ² | | | | .093 | .276 | .131 | .353 |
| Current age 15-24 | 327 | 100.0 | 1.53 | | | | |
| Age at marriage | | | | | | | |
| 16 or less | 201 | 61.5 | 1.76 | .22 | -.08 | .21 | -.07 |
| 17-18 | 70 | 21.4 | 1.40 | -.13 | .11 | -.12 | .11 |
| 19 or more | 56 | 17.1 | .91 | -.62 | .15 | -.59 | .11 |
| Eta or beta | | | | .22 | .07 | .21 | .06 |
| R ² | | | | .050 | .451 | .052 | .479 |

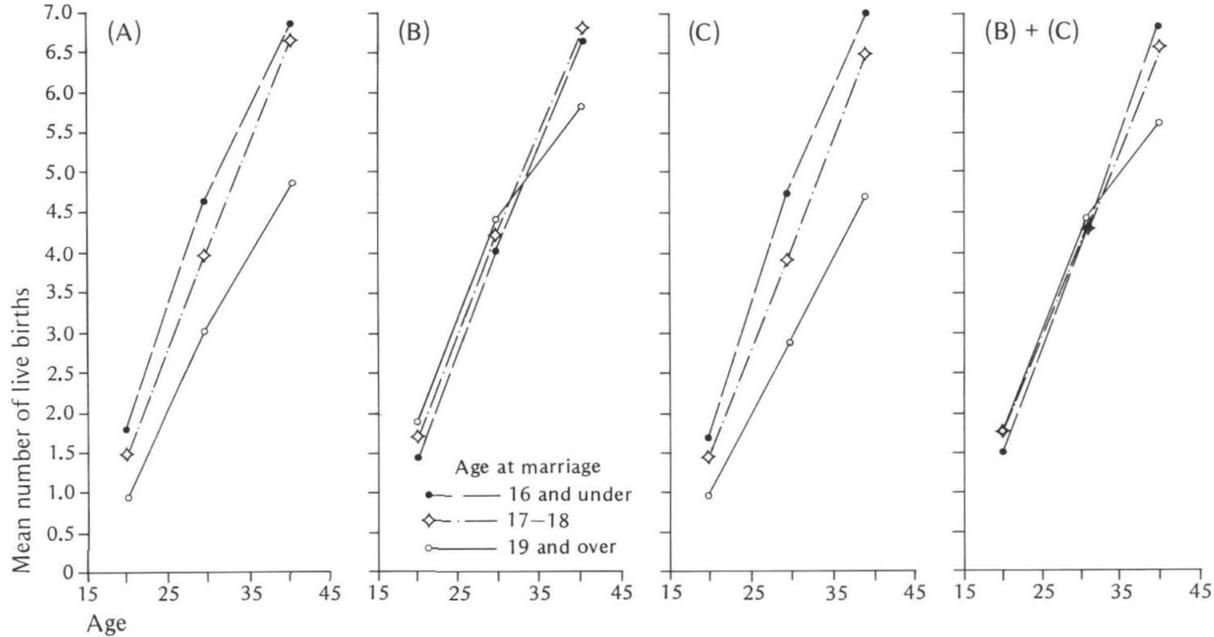
NOTE: Percentages may not sum to 100 because of rounding.

Figure 2 shows the effect of age at marriage on cumulative fertility. It plots the mean number of predicted live births for each age group and age-at-marriage category as if the women had had identical marriage durations and first pregnancy intervals. Whereas, among older women, the unadjusted difference in the mean number of live births is 29 percent, this difference is reduced to 14 percent after duration of marriage is accounted for. It rises slightly (to 32 percent) when first pregnancy interval is held constant. The combined effect of both variables indicates a difference of 16 percent in cumulative fertility between women married at age 16 or earlier and those married at age 19 or later. The data also indicate that when duration of marriage is held constant, there is virtually no difference in cumulative fertility among younger women at whatever age they married. Rather, women who married later tended to show higher cumulative fertility during their early reproductive period, which may be due to their shorter first and subsequent pregnancy intervals. Nevertheless, women who married at age 19 or later ultimately ended up with a completed family size of about one child less than those married at age 18 or younger.

The overall lower fertility among women who married at older ages, to the magnitude of 29 percent (and of 14 percent when duration of marriage is held constant), suggests that if female age at marriage in Pakistan were to increase to about 21 years, a substantial decline in fertility would occur, as has happened in other countries, such as the Republic of Korea (Kim et al., 1974). Because a very high proportion of women in our sample were married at age 16, an analysis of completed family size of women who married at age 21 or later has not been attempted. But age at marriage seems to be rising; whereas 76 percent of the older women (35–44) were married by age 16, only 62 percent of the younger women (15–34) were married by that age. Though the future fertility trend of younger women may not be correctly predicted, it is evident that younger women who postponed marriage are experiencing lower fertility than those who married at early ages. Thus, because a higher proportion of younger women are marrying at later ages, the cumulative fertility of the younger cohorts may ultimately be less than 6.6 births per woman, the rate reported for older women who married at early ages. Contraception may also play an important role in reducing cumulative fertility, even among younger women who have still not adopted any family planning method (Pakistan, Population Planning Council, 1976).

Earlier in this paper I noted a much lower cumulative fertility rate among women who married at age 19 or later, who had some higher

FIGURE 2 Mean number of live births by age at marriage, unadjusted (A) and adjusted for the effect of duration of marriage (B), first pregnancy interval (C), and combined effect of (B) and (C): currently married women aged 15–44 in urban Pakistan



SOURCE: Table 6.

education, and whose husbands were in professional and managerial occupations, than among those who were classified in the same educational and occupational categories but had married at age 16 or earlier (Table 4). Table 7 presents the MCA results of five combinations of women's educational level and husband's occupation. Very few women with husbands in unskilled occupations had more than three years of schooling, so they were combined with those whose husbands were in clerical and skilled occupations. The five categories are treated as a rough scale of socioeconomic status (SES) from low to high. As expected, women with higher SES and in the oldest age group tended to have 1.5 (or 21 percent) fewer live births than those with the lowest SES, and 1.3 fewer than the average woman in that age group. With age at marriage held constant, however, the difference is reduced to 0.9 live births (or 13 percent). Exactly the same results (0.9 fewer live births) are obtained by controlling for duration of marriage. But a slight increase (to 1.6 fewer live births with higher SES) is noticed by taking into account first pregnancy interval.

The findings suggest that age at marriage and duration of marriage are both important factors in explaining fertility differentials among different socioeconomic groups. Seventeen percent of the variance is explained by the combination of the three demographic variables among the oldest group of women. There is a substantial increase in the explanation of variance (to 37 percent) for women aged 25–34 and 49 percent for those younger than 25 years. But the results for the younger women must still be interpreted with caution because they have not yet completed their families and their future fertility behavior is not known.

Table 4 provided some evidence of a lower cumulative fertility, to the magnitude of 0.9 live births, within the Sindhi, Pushto, and Baluchi language groups as compared with those speaking Urdu and Punjabi. Yet the latter groups reported much lower cumulative fertility among women who postponed marriage. This difference may be explained by whether current residence was in metropolitan or nonmetropolitan areas, as shown in Table 8. Because of the fairly small numbers of women of the Sindhi, Pushto, and Baluchi language groups residing in metropolitan areas, they are all treated here as nonmetropolitan. In any case, those residing in metropolitan areas would have recently moved there, for the two largest cities of Karachi and Lahore are largely inhabited by Urdu and Punjabi speaking populations.

That the highest cumulative fertility (7.8 births) was reported for Urdu speaking metropolitan women may be due to the fact that this

TABLE 7 Multiple classification analysis of number of live births, using socioeconomic status as a predictor and age at marriage (A), duration of marriage (B), and first pregnancy interval (C) as covariates, for three age groups of currently married women in urban Pakistan, 1968-69

| Current age, years of schooling, and husband's occupation | Num- ber (1) | Per- centage (2) | Mean number of live births (grand or cat- egory mean) (3) | Unadjusted deviation from grand mean (4) | Deviation adjusted for: | | | |
|---|--------------------|------------------------|---|--|-------------------------|------------|------------|--------------------|
| | | | | | (A) (5) | (B) (6) | (C) (7) | (A)+(B)+(C) (8) |
| Current age 35-44 | 275 | 100.0 | 6.73 | | | | | |
| ⊂, unskilled | 77 | 28.0 | 6.93 | .20 | .15 | .15 | .24 | .18 |
| ⊂, clerical/skilled | 84 | 30.6 | 6.84 | .11 | -.02 | .03 | .14 | .01 |
| ⊂, professional/managerial | 76 | 27.6 | 6.75 | .02 | .03 | -.02 | .01 | -.02 |
| ⊃, unskilled/clerical/skilled | 19 | 6.9 | 6.63 | -.10 | .13 | .06 | -.31 | -.08 |
| ⊃, professional/managerial | 19 | 6.9 | 5.47 | -1.26 | -.76 | -.74 | -1.31 | -.61 |
| Eta or beta | | | | .12 | .07 | .07 | .13 | .06 |
| R ² | | | | .014 | .056 | .086 | .077 | .167 |
| Current age 25-34 | 433 | 100.0 | 4.33 | | | | | |
| ⊂, unskilled | 117 | 27.0 | 4.29 | -.04 | -.20 | -.20 | 0 | -.10 |
| ⊂, clerical/skilled | 141 | 32.6 | 4.25 | .08 | .04 | .02 | .10 | .06 |
| ⊂, professional/managerial | 99 | 22.9 | 4.27 | .06 | .02 | .03 | .03 | -.06 |
| ⊃, unskilled/clerical/skilled | 39 | 9.0 | 4.25 | .08 | .35 | .26 | .03 | .16 |
| ⊃, professional/managerial | 37 | 8.5 | 3.92 | -.41 | .06 | .17 | -.49 | .08 |
| Eta or beta | | | | .06 | .07 | .07 | .07 | .04 |
| R ² | | | | .004 | .120 | .284 | .018 | .365 |
| Current age 15-24 | 296 | 100.0 | 1.59 | | | | | |
| ⊂, unskilled | 84 | 28.4 | 1.53 | -.06 | -.18 | -.27 | -.11 | -.18 |
| ⊂, clerical/skilled | 96 | 32.4 | 1.54 | -.05 | -.08 | -.05 | -.04 | -.07 |
| ⊂, professional/managerial | 52 | 17.6 | 1.75 | .16 | .11 | .27 | .17 | .29 |
| ⊃, unskilled/clerical/skilled | 34 | 11.5 | 1.74 | .15 | .36 | .22 | .17 | .13 |
| ⊃, professional/managerial | 30 | 10.1 | 1.47 | -.12 | .18 | .22 | -.07 | .09 |
| Eta or beta | | | | .07 | .12 | .15 | .08 | .12 |
| R ² | | | | .005 | .071 | .460 | .013 | .492 |

TABLE 8 Multiple classification analysis of number of live births, using current residence and language as a predictor and age at marriage (A), duration of marriage (B), and first pregnancy interval (C) as covariates, for three age groups of currently married women in urban Pakistan, 1968–69

| Current age, current residence, and language | Num- ber (1) | Per- centage (2) | Mean number of live births (grand or cat- egory mean) (3) | Unadjusted deviation from grand mean (4) | Deviation adjusted for: | | | |
|--|--------------------|------------------------|---|--|-------------------------|------------|------------|--------------------|
| | | | | | (A) (5) | (B) (6) | (C) (7) | (A)+(B)+(C) (8) |
| Current age 35–44 | 310 | 100.0 | 6.65 | | | | | |
| Nonmetropolitan, Urdu | 57 | 18.4 | 6.23 | -.42 | -.49 | -.58 | -.29 | -.45 |
| Metropolitan, Urdu | 41 | 13.2 | 7.83 | 1.18 | 1.15 | .87 | 1.22 | .94 |
| Nonmetropolitan, Punjabi | 112 | 36.1 | 6.91 | .26 | .23 | .34 | .24 | .29 |
| Metropolitan, Punjabi | 35 | 11.3 | 6.35 | -.30 | -.19 | -.15 | -.42 | -.25 |
| Nonmetropolitan, Sindhi, Pusho, Baluchi | 65 | 21.0 | 5.99 | -.66 | -.58 | -.54 | -.70 | -.57 |
| Eta or beta | | | | .20 | .19 | .17 | .20 | .17 |
| R ² | | | | .039 | .070 | .114 | .091 | .172 |
| Current age 25–34 | 473 | 100.0 | 4.72 | | | | | |
| Nonmetropolitan, Urdu | 92 | 19.5 | 4.41 | .19 | .11 | .09 | .21 | .13 |
| Metropolitan, Urdu | 61 | 12.9 | 4.47 | .25 | .21 | .01 | .27 | .02 |
| Nonmetropolitan, Punjabi | 177 | 37.4 | 4.23 | .01 | .09 | .07 | 0 | .05 |
| Metropolitan, Punjabi | 57 | 12.0 | 4.43 | .21 | .17 | .25 | .18 | .16 |
| Nonmetropolitan, Sindhi, Pusho, Baluchi | 86 | 18.2 | 3.67 | -.55 | -.56 | -.42 | -.54 | -.36 |
| Eta or beta | | | | .13 | .13 | .10 | .13 | .08 |
| R ² | | | | .017 | .142 | .284 | .027 | .360 |

TABLE 8 (continued)

| Current age, current residence, and language | Num- ber (1) | Per- centage (2) | Mean number of live births (grand or cat- egory mean) (3) | Unadjusted deviation from grand mean (4) | Deviation adjusted for: | | | |
|--|--------------------|------------------------|---|--|-------------------------|------------|------------|--------------------|
| | | | | | (A) (5) | (B) (6) | (C) (7) | (A)+(B)+(C) (8) |
| Current age 15–24 | 324 | 100.0 | 1.53 | | | | | |
| Nonmetropolitan, Urdu | 69 | 21.3 | 1.78 | .25 | .19 | .02 | .24 | .03 |
| Metropolitan, Urdu | 32 | 9.9 | 1.31 | -.22 | -.32 | -.29 | -.20 | -.31 |
| Nonmetropolitan, Punjabi | 102 | 31.5 | 1.51 | -.02 | .13 | .11 | -.01 | .11 |
| Metropolitan, Punjabi | 32 | 9.9 | 1.78 | .25 | .39 | .37 | .29 | .30 |
| Nonmetropolitan, Sindhi, Pusho, Baluchi | 89 | 27.4 | 1.34 | -.19 | -.32 | -.17 | -.20 | -.15 |
| Eta or beta | | | | .13 | .18 | .13 | .13 | .12 |
| R ² | | | | .018 | .098 | .472 | .027 | .503 |

group does not have the characteristics typical of a metropolitan population. Most of the women in this group married a generation ago, were new immigrants from central India having either rural or non-metropolitan backgrounds, and came from traditionally large families (Driver, 1963). Moving to the city may have improved their living level but not affected their traditional fertility values, thus providing the condition for higher fertility. Moreover, with better medical facilities in the nation's capital² than in rural areas, the chances of pregnancy loss were smaller for this group of women. Finally, as mentioned earlier, women in the metropolitan areas tend to have fewer recall problems when reporting the total number of live births. On the other hand, fewer medical facilities have been available to the other groups, particularly to the Sindhi, Pushto, and Baluchi language groups, who might have had more incidents of pregnancy loss and thus may have reported fewer live births.

The substantial difference in cumulative fertility among ethnic and residential groups is largely reduced among women in the middle age group (24–34), the first four groups reporting almost the same cumulative fertility. In the youngest age group (15–24), the fertility pattern is opposite to that of the oldest group: Urdu speaking metropolitan women reported the *lowest* fertility. They were followed by the non-metropolitan Sindhi, Pushto, and Baluchi speaking groups; and highest fertility was reported by the nonmetropolitan Urdu and metropolitan Punjabi speaking groups. This finding suggests that if the present trend continues, Urdu speaking women in the largest city (Karachi) will eventually have lower cumulative fertility than women of other ethnic groups and areas. The apparent fertility decline among Urdu speaking metropolitan women may be due to a combination of factors affecting female age at marriage as well as fertility, such as better educational facilities, a higher standard of living, a higher proportion of women in the nonagricultural labor force, the housing shortage, greater exposure to the mass media, and the concentration of family planning activities during more than two decades.

With an increase in female age at marriage, the enrollment in schools above the primary level, higher labor force participation in nonagricultural occupations, and a wider use of contraception, a decline in fertility among Pakistani women might be expected in the near future. This is indicated by the lower cumulative fertility of younger women, who married later, completed four or more years of schooling, and were living in metropolitan areas.

² Karachi was Pakistan's capital until 1961.

SUMMARY AND CONCLUSIONS

The well-established inverse relationship between age at marriage and cumulative fertility has been examined in this paper with data from the 1968–69 Pakistan National Impact Survey for currently married women 15–44 years of age who were living in urban areas. These women reported marrying at the very low mean age of 16 years, although among recently married women age at marriage was slightly higher (17.5). As a result of their lower age at marriage, women aged 35–44 at the time of the survey had a high cumulative fertility rate of 6.7 births. Twenty-nine percent lower cumulative fertility was reported by women who married at age 19 or later, compared with those married at age 16 or earlier. The latter group bore an average of 1.5 additional children, reported 1.9 additional pregnancies, and had a 1.7 higher total marital fertility rate. However, women who postponed marriage tended to reproduce faster, reporting a first pregnancy interval ten months shorter than that of women who married at earlier ages. Women with four or more years of schooling and husbands in professional and managerial occupations who married late had the lowest cumulative fertility. Cumulative fertility differentials among ethnic groups and between metropolitan and nonmetropolitan residents were also found among women who married at younger and older ages.

The MCA results indicate that duration of marriage and first pregnancy interval are important predictors in explaining the relationship between age at marriage and cumulative fertility. After taking into account duration of marriage, I found cumulative fertility to be 14 percent lower among women who postponed marriage compared with those who married at early ages. When the first pregnancy interval was controlled, the cumulative fertility was 32 percent lower for late marrying women. Socioeconomic status appears to have had a strong bearing on cumulative fertility; the relationship was also affected by age at marriage and duration of marriage. Older, Urdu speaking women living in metropolitan areas had the highest average cumulative fertility; but younger, Urdu speaking women living in metropolitan areas reported the lowest cumulative fertility of all ethnic groups. Age at marriage and duration of marriage were again important predictors of cumulative fertility for each of the categories of social and economic characteristics.

Though the data revealed an inverse relationship between cumulative fertility and age at marriage, it should be kept in mind that demographic variables are affected by social, economic, cultural, and other conditions, in Pakistan as elsewhere. These conditions have been

changing rapidly in recent years as a result of socioeconomic development, particularly in urban areas. Because the findings reported here mainly apply to older women who were not affected by this rapid change during their reproductive years, more research is needed on the impact of these changes on younger age cohorts. Female age at marriage should be treated as an important aspect of population policy in Pakistan, where an integrated approach is needed to reduce high fertility. Increasing the legal female age at marriage from 16 to 19 years or more would have both social and demographic benefits. An average female age at marriage of 17 years is too low for a country in which marriage is universal.

The values supportive of lower age at marriage have deeply rooted social and economic bases. Girls are considered a liability, for they are not expected to be economically productive; therefore parents desire them to marry early. It seems apparent that not only must the legal age at marriage be increased, but also basic changes in women's roles must be introduced if a decline in fertility is to take place in Pakistan.

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