Marriage Patterns in Pakistan through Net Nuptiality Tables – 1968 & 1971

NAUSHIN IFTIKHAR AND MOHAMMAD AFZAL*

Introduction

In studying the processes which bring about changes in the size and composition of a population, an appraisal of marriage patterns is of special significance because the age and rate of marriage formation relate directly to changes in population composition. In a society like Pakistan where fertility takes place predominantly through the formation of families by marriages, the frequency of marriages at different ages has direct bearing on the effective length of reproductive period. Thus, for getting a proper insight into the demographic phenomena, statistics on marriages are also of great interest to demographers along with information on fertility, mortality and migration.

Studies on frequencies of marriages by age, referred to in the demographic terminology as nuptiality studies, are rather limited in demographic literature, particularly in comparison with studies on fertility and mortality. There are two obvious reasons for relatively low priority given to this subject in spite of due recognition of its importance. Firstly, because of the rapid growth of population since the turn of the century the role of fertility and mortality as direct determinants of growth patterns has been much more significant. As a result, the major interest of researchers has remained focussed on the vital events contributing to the natural increase, viz. births and deaths. Secondly, a regular system of marriage registration is limited to a few countries in the world, and in most of the other countries, such information is either not available or if in some cases it is available, no regular statistics are compiled out of them. The limited availability of statistics on incidence of marriage through vital registration does not imply that information on marriage patterns is not available from other sources. In fact much work has been done on the basis of data on age distribution of population by marital status provided by censuses or surveys.

The study of nuptiality, irrespective of the source of data, has recently been attracting greater interest of demographers in Pakistan. The first comprehensive study which was carried out by Sadiq [16] provided estimates of average age at marriage in Pakistan and its various regions out of the 1961 census data through the application of Hajnal[1] technique [11]. Subsequently, Korson [13], Afzal et al. [2, 4], Bean and Afzal [7], and Khan [12] provided direct estimates of age at marriage

[1]The same technique was applied by Alam [6] to get mean age at marriage from PGE data.

and some other features of nuptiality out of the marriage registration forms recorded in the Union Councils/Committees, under the Muslim Family Law Ordinance 1961, in the cities of Karachi and Lahore, and some rural areas of the Sheikhupura district of the Punjab province. The studies based on the data in marriage registration forms are, however, limited to some specific areas because no statistics are compiled officially out of such data which could ultimately lead to direct estimation of nuptiality on national or regional basis. Thus, as in most of the countries of the world, estimates of nuptiality in Pakistan as a whole or, for that matter, in the provinces can only be arrived at through indirect approaches out of the information on marital status provided by the censuses or surveys.

For studying the patterns of nuptiality, one of the most refined statistical tools is the nuptiality table, which describes the incidence of nuptiality from various demographic dimensions. Basically the nuptiality table describes the patterns of single persons entering the marital union at different ages throughout the life span. In other words, it generates the life history of a hypothetical cohort of single persons assumed to have been born at one point of time, as it is diminished by attrition due to marriages and deaths occurring at different ages. For constructing such a table, if attrition effect due to marriages alone is taken, it is called Gross Nuptiality Table. If, however, the mortality effect is simultaneously accounted for, then the table is called a Net Nuptiality Table [17]. The concept of nuptiality table is, therefore, basically analogous to that of a standard life table. Just as the life table gives a comprehensive description of mortality patterns and subsequently life expectancy at various ages through the application of age specific mortality risks on a hypothetical cohort, the nuptiality table portrays the patterns of simultaneous effect of marriages and deaths on a hypothetical cohort leading ultimately to estimates of average expected years of life up to marriage and other related estimates including average age at marriage.[2]

The first Net Nuptiality Tables for Pakistan were constructed by the authors of this paper [5] out of the Population Growth Estimation (PGE) Project data for the period 1962—65. For preparing these tables, the age specific mortality risks were drawn from the complete life tables prepared by Yusaf and Farooqui [18] out of the PGE data. The nuptiality probabilities were worked out of the PGE population distribution by age and marital status for the year 1965. For arriving at nuptiality probabilities, a new formula was developed to estimate first the number of marriages occurring at different ages in a hypothetical cohort and then relating them to the single survivors existing at the beginning of the age interval. This approach is described more specifically in the appendix, along with the methodology of Constructing Net Nuptiality Table as developed by Saveland and Glick [17].

Objectives of the Present Study

The scope of the present study is to describe the marriage patterns in Pakistan by constructing first a new set of net nuptiality tables from Population Growth Survey (PGS) data for 1968 and 1971, and then estimating various other demographic measures relating to incidence of marriages in Pakistan[3]. Specifically the following estimates have been worked out for males and females separately :

(i) Average expected years of single life before marriage ;

(ii) Age-specific marriage rates in a hypothetical cohort ;

(iii) Total marriage rate in a hypothetical cohort ;

(iv) Total marriages in a year in the actual population given by the PGS, 1968 and 1971, and their age-wise distribution ;

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[2]Some of the possible uses of Net Nuptiality Tables have been described in the authors earlier study [5]. Further details, however, can be found in the relevant demographic literature.

[3]The PGE and PGS were the two projects which were set up in Pakistan to estimate vital rates through selected sample areas. The PGE project which was carried out from 1962 through 1965 followed a dual system of data collection, viz. registration and Survey. The PGS however, collected vital data through Survey approach alone from 1968 through 1971.

    (v) Mean and median age at marriage in the actual 1968 and 1971 PGS populations ; and

    (vi) Estimates of crude marriage rates and general marriage rates for the actual 1968 and 1971 PGS populations.

Salient Features of Nuptiality

The corresponding Net Nuptiality Tables for males and females worked out for the years 1968 and 1971 separately are presented as Appendix Tables Ia, Ib, IIa and IIb respectively. These tables which have been prepared by using a common life table for each sex would reflect variations between 1968 and 1971 due to nuptiality only. Within each year, however, the nuptiality table provides results due to the simultaneous effect of patterns of nuptiality and mortality. In addition to variations due to these two factors, the effect of sampling and non-sampling errors are obviously built in the estimates under each column of the table, because the PGS results are sample estimates subject to sampling and non-sampling errors.

An overall view of the nuptiality tables reflects rather similar patterns in the years 1968 and 1971 with the exception of variations which are more likely due to errors of response, coverage and estimation.

Column 1 of the tables for males and females shows that the probability of getting married for females increase sharply at relatively younger ages to relatively higher levels and then falls rapidly, over the ages 17 to 34. Afterwards the probabilities remain more or less at a steady level. The corresponding probabilities for males, however, are more spread over to higher ages. It may be mentioned here that in working out the marriage probabilities, no attempt was made to smooth the estimates (or the basic data) with the result that some sudden variations are observed in column 1.

Corresponding to the estimates of marriage probabilities, the estimates of marriages occurring in the hypothetical cohort against each age are provided in the column designated as $\mathcal{U}'_x$. This column indicates that the number of marriages in the case of males is conspicuously large in ages 18 to 27, and in the case of females, the marriages are more concentrated in the ages 13 to 22.

For a comparison at a glance between age-wise distribution *patterns* of males and females, the estimated number of marriages at each age are graphically portrayed in Fig. 1. The figure clearly shows the male and female differentials in the incidence of marriages by age which correspond to the patterns of marriage probabilities already observed.

Average Expected Year of Single Life

Let us now examine the estimates of average expected years of single life remaining ($^o e'_x$) at different ages, i.e. the average expected years to marriage as provided in the last column of the Net Nuptiality Tables (*See* also Fig. 2). The following is a brief statement of expected years to marriage of males and females for the years 1968 and 1971 from age zero ($^o e'_0$) and age 10 ($^o e'_{10}$)

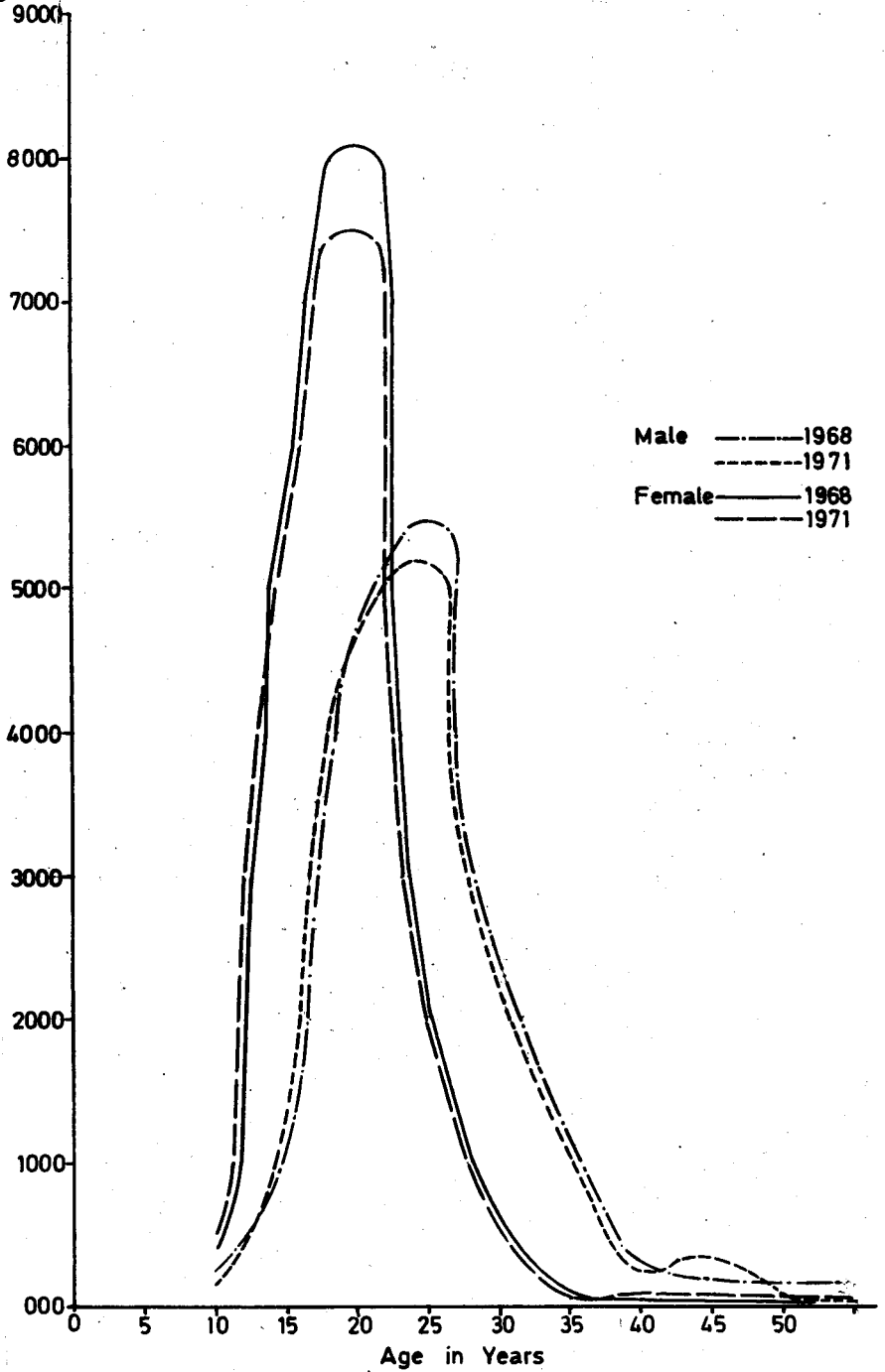| Year	Male		Female	
	$^o e'_0$	$^o e'_{10}$	$^o e'_0$	$^o e'_{10}$
1968	22.0	16.4	16.6	9.9
1971	21.5	15.8	16.4	9.7

Marriages per
100,000 Single
Persons

Fig. 1
Distribution of Marriages by Age and Sex (Smoothed) based on
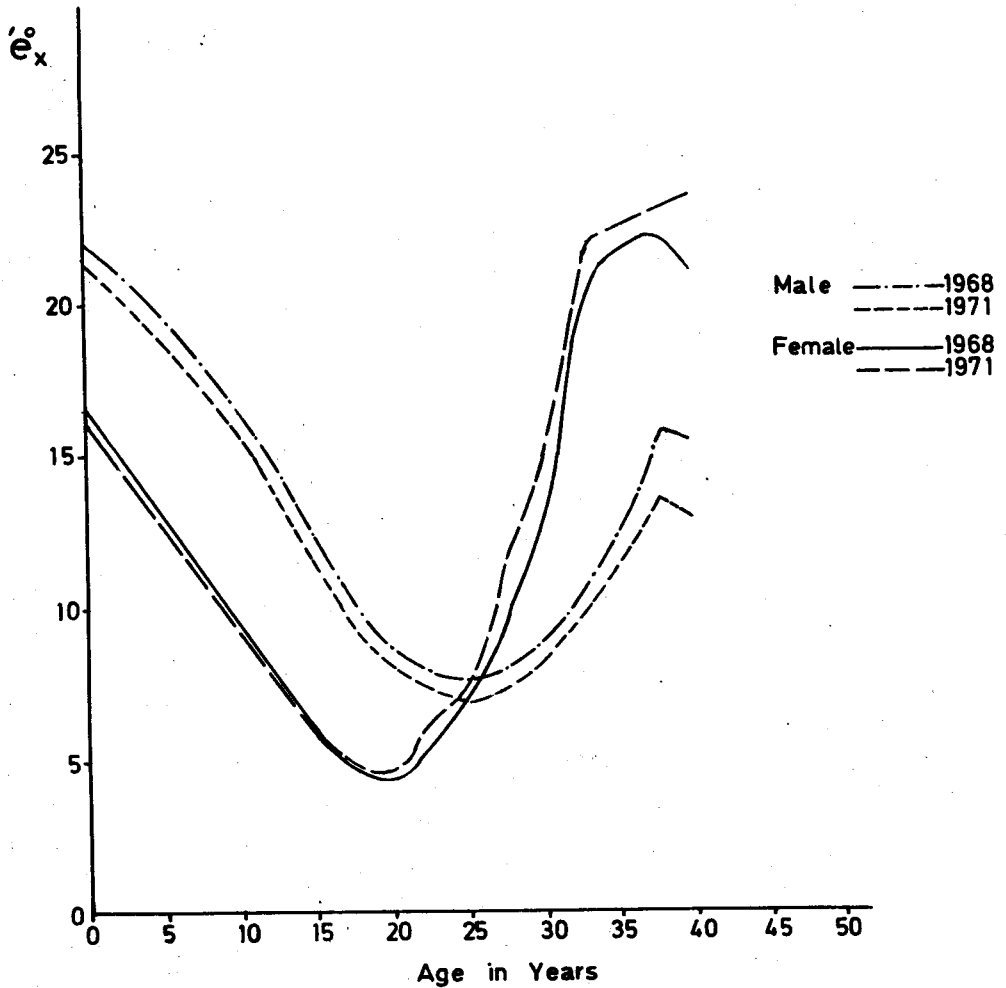Net Nuptiality Tables for 1968 and 1971.

Fig. 2

Average Expected Years of Single Life for Male and
Females at Different Ages ($\overset{\circ}{e}_x$) From Net Nuptiality
Tables for 1968 and 1971

The above statement shows that for males the average expected years to marriage at birth are nearly 22, and at age 10 are nearly 16. The corresponding estimate for females at age zero is about 16 and at age 10 is about 10 , for 1968 as well as 1971. Since we have used one life table (PGS 1968 and 1971 average) for both the nuptiality tables, there are no inherent variations between the nuptiality tables for 1968 and 1971, due to mortality. When these nuptiality tables are compared with the author's earlier nuptiality tables for 1965, there are visible differences in the male value of $^oe'_0$ (19.4) and $^oe'_{10}$ (15.22) ; and the females values of $^oe'_0$ (14.2) and $^oe'_{10}$ (9.3). These differences are primarily due to the use of different life tables in 1965 study as compared with 1968—71 study. It may be mentioned here that the complete life tables by Yusaf and Farooqui [18] used in 1965 were based on PGE mortality rates estimated through the Chandra-Deming formula [8] which yields relatively higher estimates of vital rates as compared with the survey estimates like those given by the PGS, which were used in the life table for the present study. Keeping in view the fact that there are little differences in the mean and median ages at marriage between the 1965 and the 1968—71 studies (as will be seen in subsequent section of this paper), the differences in estimates of $^oe'_x$ are obviously associated with the differences in the mortality values given by PGE-based Yusaf-and-Farooqui life table for 1962—65 [18] and PGS-based Farooqui-and-Alam life tables for 1968—71 [10].

From the value of $^oe'_0$, approximate estimates of average expected years after marriage can be arrived at by subtracting $^oe'_0$ from the $^oe_0$ value of the corresponding life table used in the nuptiality table. The estimates for males and females so arrived at are as follows :

Year	Male	Female
1968	30.9	35.3
1971	31.4	35.4

The estimates, being almost the same for both the years, indicate that with given mortality and nuptiality conditions as estimated on the basis of the PGS, a male on the average has nearly 30 years of expected life after marriage whereas for females the estimate comes to about 35 years. This, however, does not imply that a male or female has as many expected years of married life, because a number of them are likely to be divorced or widowed after marriage. In another study by Afzal *et al.* [3] an attempt has been made to arrive at estimates of average years of life between marriage and widowhood or divorce or death up to age 50. Such an estimate would give an idea about the period of exposure to the risk of pregnancy for females under the given conditions of mortality, nuptiality and widowhood-divorce patterns.

Age-Sex Specific Marriage Rates

The estimates of marriages against single years as worked out in the U'_x column have been cumulated for standard five-year age groups. By dividing the estimated number of marriages in each age group by the corresponding stationary population (n^L_x) from the PGS - based life table, the estimates of age specific marriage rates in the hypothetical cohort have been worked out for males and females separately and are given in Tables Ia, Ib, IIa and IIb for the years 1968 and 1971.

These rates show that for males the highest frequency of marriages occurs in the age group 20—24 both for 1968 and 1971. The 1971 rates are, however, relatively lower than the 1968 rates. The lower rates for 1971 are due to the relatively

lesser number of estimated marriages in that year, attributable to (i) sampling variations in the PGS estimates of population for the years 1968 and 1971 and (ii) a relatively better coverage in 1968 than in 1971.

The corresponding rates for females are highest in the age group 15 -19, followed closely by the age group 20—24. Thereafter, there is sharp decrease in the subsequent age groups.

Total Marriage Rate

From the estimates of age specific marriage rates, Total Marriage Rate (TMR) has been estimated in the same way as the Total Fertility Rate (TFR) is derived from age-specific fertility rates. Just as Total Fertility Rate provides a measure of completed family size that a woman on the average will bear in a life time, the TMR indicates the total number of marriages in a synthetic cohort passing through life together. Tables Ia and Ib show that TMR for males in Pakistan comes to 977 per 1000 according to the PGS 1968 and 976 per 1000 for the PGS 1971 population. The corresponding rate for females (Tables IIa and IIb) comes to 986 per 1000 for 1968, and 979 for 1971. These results imply that about 98 percent of males or females would eventually marry in the synthetic cohort.

Marriages in the Actual Population

From the age specific marriage rates in the hypothetical cohort, we have worked out the estimates of marriages in the actual population by multiplying these rates by the PGS population in the corresponding age groups. The estimates so arrived at for males and females separately are given in the tables for 1968 and 1971 referred to above.

Mean and Median Age at Marriage

The estimated marriages in the actual PGS 1968 and 1971 populations have been used to compute the mean and median age at marriage for males and females. It may be mentioned here that the estimate of marriages worked out in this way takes account of the age distribution of actual population. These rates which are presented in Tables Ia, Ib, IIa, and IIb are summarized in the following statement :

Year	Mean		Median	
	Male	Female	Male	Female
1968	24.6	19.2	24.0	18.7
1971	24.3	18.9	23.8	18.3

The above statement shows that over the years 1968 and 1971, the mean age at marriage for males as well as for females remained practically unchanged. When compared with the corresponding estimates for the year 1965 (male 25.2 and female 19.3) as provided by the authors' earlier study [5], the 1968 and 1971 estimates show little change over this period. These results are supported by direct estimates of about the same mean age at marriage in 1962 and 1965 for Karachi, prepared by Afzal et al. [2] and estimates made of the same source for Lahore city (1969)

Table 1a

Estimates of Various Marriage Rates for Males Corresponding to PGS 1968 Population

Age Group	Life table stationary population $_nL_x$	Marriages in the hypothetical cohort in the age x to x - n (from nuptiality table) $_n\mathcal{V}_x$	Age specific marriage rate in the hypothetical cohort $\dfrac{_n\mathcal{V}_x}{_nL_x}$	PGS-1968 actual male population $_nP_x^m$	Estimated marriages in actual PGS-1968 males population $_nM_x^m$
1	2	3	4	5	6=4×5
10—14	404,803	2,359	.00583	2,732,695	15.932
15—19	401,540	13,279	.03307	1,911,391	63.210
20—24	398,008	24,695	.06205	1,868,113	115.916
25—29	394,193	20,127	.05106	1,807,818	92.307
30—34	389,880	10,043	.02576	1,488,998	38.357
35—39	384,765	3,893	.01012	1,254,305	12.694
40—44	378,513	1,162	.00307	1,092,819	3.355
45—49	370,425	1,158	.00313	851,905	2.666
50—55	359,198	467	.00130	898,193	1.168

$$TMR = \sum_{to}^{50+} \frac{_n\mathcal{V}_x}{_nL_x} = 977 \text{ per thousand}$$

Crude Marriage Rate (CMR) per thousand of PGS-1968 population (based on male marriages)

$$= \left\{ \sum_n{}^m_x M_x^m \div \left(\sum_n P_x^m + \sum_n P_x^f \right) \right\} \times 1000 = 7.8 \text{ per thousand}$$

Mean age at marriage of (1968) males = 24.6
Median age at marriage of males (1968) = 24.0

G.M.R. for males in PGS-1968 population =

$$\frac{\sum_{to}^{50+} {_n}M_x^m \times 1000}{\text{all un-married males }(10+)} = 45.6 \text{ per thousand}$$

Table Ib

Estimates of Various Marriage Rates for Males Corresponding to PGS 1971 Population

Age Group	Life table stationary population $_n L_x$	Marriages in the hypothetical cohort in the age x to x+n $_n \nu_x^x$ (from nuptiality table)	Age specific marriage rate in the hypothetical cohort $_n\nu' = \dfrac{_n\nu}{_n L_x}$	PGS 1971 actual male population $_n P_x^m$	Estimated marriages in actual PGS-1971 male population $_n M_x^m$
1	2	3	4	5	6 = 4 × 5
10—14	404,803	2,584	.00638	3,025,326	19,302
15—19	401,540	14,214	.03540	1,859,215	65,816
20—24	398,008	24,788	.06228	1,585,185	98,725
25—29	394,193	20,102	.05099	1,640,441	83,646
30—34	389,880	9,843	.02525	1,437,301	36,292
35—39	384,765	3,209	.00834	1,295,068	10,801
40—44	378,531	1,482	.00392	1,147,172	4,497
45—49	370,425	945	.00255	837,426	2,135
50 +	359,198	46	.00013	785,679	102

TMR (1971) in the hypothetical cohort = 976

GMR in PGS-1971 male population = 43.2 per thousand

Crude Marriage Rate per thousand of PGS-1971 Population (based on male marriages) = 7.2 per thousand

Mean age at marriage of males (1971) = 24.3

Median age at marriage of males (1971) = 23.8

Table Ib

Estimates of Various Marriage Rates for Males Corresponding to PGS 1971 Population

Age Group	Life table stationary population $_nL_x$	Marriages in the hypothetical cohort in the age x to x+n (from nuptiality table) $_n\mathcal{V}'_x$	Age specific marriage rate in the hypothetical cohort $\dfrac{_n\mathcal{V}'_x}{_nL_x}$	PGS 1971 actual male population $_nP^m_x$	Estimated marriages in actual PGS-1971 male population $_nM^m_x$
1	2	3	4	5	6 = 4×5
10—14	404,803	2,584	.00638	3,025,326	19,302
15—19	401,540	14,214	.03540	1,859,215	65,816
20—24	398,008	24,788	.06228	1,585,185	98,725
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50+	359,198	46	.00013	785,679	102

TMR (1971) in the hypothetical cohort = 976

GMR in PGS-1971 male population = 43.2 per thousand

Crude Marriage Rate per thousand of PGS-1971 Population (based on male marriages) = 7.2 per thousand

Mean age at marriage of males (1971) = 24.3

Median age at marriage of males (1971) = 23.8

Table Ib

Estimates of Various Marriage Rates for Males Corresponding to PGS 1971 Population

Age Group	Life table stationary population $_nL_x$	Marriages in the hypothetical cohort in the age x to x+n $_n\nu'_x$ (from nuptiality table)	Age specific marriage rate in the hypothetical cohort $_n\nu' = \dfrac{_n\nu'_x}{_nL_x}$	PGS 1971 actual male population $_nP_x^m$	Estimated marriages in actual PGS-1971 male population $_nM_x^m$
1	2	3	4	5	$6 = 4 \times 5$
10—14	404,803	2,584	.00638	3,025,326	19,302
15—19	401,540	14,214	.03540	1,859,215	65,816
20—24	398,008	24,788	.06228	1,585,185	98,725
25—29	394,193	20,102	.05099	1,640,441	83,646
30—34	389,880	9,843	.02525	1,437,301	36,292
35—39	384,765	3,209	.00834	1,295,068	10,801
40—44	378,531	1,482	.00392	1,147,172	4,497
45—49	370,425	945	.00255	837,426	2,135
50 +	359,198	46	.00013	785,679	102

TMR (1971) in the hypothetical cohort = 976

GMR in PGS-1971 male population = 43.2 per thousand.

Crude Marriage Rate per thousand of PGS-1971 Population (based on male marriages) = 7.2 per thousand

Mean age at marriage of males (1971) = 24.3

Median age at marriage of males (1971) = 23.8

Table IIa

Estimates of Various Marriage Rates for Female Corresponding to PGS 1968 Population

Age Group	Life table stationary population $_nL_x$	Marriages in the hypothetical cohort in the age x to x+n (from nuptiality table) $_n\mathcal{V}_x$	Age specific marriage rate in the hypothetical cohort $\dfrac{_n\mathcal{V}_x}{_nL_x}$	PGS-1968 actual Female population $_nP_x^f$	Estimated marriages in actual PGS-1968 female population $_nM_x^f$
1	2	3	4	5	6 = 4 × 5
10—14	406,595	12,712	.03126	2,273,663	71,075
15—19	400,310	32,475	.08112	1,623,893	131,730
20—24	393,883	24,884	.06318	1,777,545	112,305
25—29	387,233	6,251	.01614	1,648,032	26,599
30—34	380,243	1,583	.00416	1,363,004	5,670
35—39	372,743	216	.00058	1,059,990	615
40—44	364,475	151	.00041	1,000,339	410
45—49	355,028	113	.00032	704,944	226
50 -	343,713	10	.00003	777,199	24

Total Marriage Rate (TMR) $= 5 \dfrac{\sum_{10}^{50+} {}_n\mathcal{V}'}{_{10}\mathcal{L}_x} = 986$ per thousand
(in the hypothetical cohort)

General Marriage Rate (GMR) in PGS-1968 females population $= \dfrac{\sum_{10}^{50+} {}_nM_x^f \times 1000}{\text{all unmarried females (aged 10+)}} = 66.5$ per thousand

Crude Marriage Rate (CMR) per thousand of PGS-1968 population (from col. 6 and total   Population given by

PGS-1968) $= \left\{ \dfrac{\sum_{10}^{50+} {}_nM_x^f}{(\sum {}_nP_x^m + \sum {}_nP_x^f)} \right\} \times 1000 = 7.9$ per thousand

Mean age at marriage of females (1968) $= 19.2$
Median age at marriage of females (1968) $= 18.9$

Table IIb

Estimates of Various Marriage Rates for Females Corresponding to PGS 1971 Population

Age Group	Life table stationary population $_nL_x$	Marriages in the hypothetical cohort in the age x to x+n (from nuptiality table) $_n\mathcal{Y}x$	Age specific marriage rate in the hypothetical cohort $\dfrac{_n\mathcal{Y}'x}{_nL_x}$	PGS-1971 actual female population $_nP_x^f$	Estimated marriages in actual PGS-1971 female population $_n M_x^f = 4 \times 5$
1	2	3	4	5	6 = 4 x 5
10—14	406,595	14,299	.03517	2,446,832	86,055
15—19	400,310	32,136	.08028	1,536,694	123,366
20—24	393,883	23,456	.05955	1,577,360	93,932
25—29	387,233	6,091	.02573	1,573,753	24,755
30—34	380,243	1,397	.00367	1,359,035	4,988
35—39	372,743	315	.00085	1,099,777	935
40—44	364,475	134	.00037	874,706	324
45—49	355,028	5	.00001	595,123	6
50	343,713	2	.00006	583,786	6

TMR (1971) in the hypothetical cohort = 979 per thousand
GMR in PGS-1971 female population = 66.1 per thousand
Crude Marriage rate per thousand of PGS-1971 Population (based on female marriages) = 7.5
Mean age at marriage of females (1971) = 18.7
Median age at marriage of females (1971) = 18.3

by Khan [12]. Another study by Afzal *et al.* [4] for rural areas in Sheikhupura district of the Punjab gives a little lower mean age at marriage for males (22.4 and 22.6) but practically the same (18.8 and 19.1) for females.[4] An inference which can be clearly drawn from these results is that the mean age at marriage for females has shown little change over the period 1965—71, the estimates remaining very close to 19.

The estimates of median age at marriage of both males and females are only about half-a-year lower than the corresponding estimates of mean age at marriage. Similarly the 1971 median estimates are only slightly lower than the 1968 estimates, which indicate little change over this period. The overall comparison of the estimates of mean and median age at marriage suggests that the nuptiality patterns in Pakistan have practically remained unaltered over the years 1965—71.

Crude and General Marriage Rates

The estimates of marriages in actual PGS population $_nM_x^m$ have been used to arrive at the Crude and General Marriage Rates in the corresponding population. The Crude Marriage Rates (CMR), defined as the total number of marriages in a given period per thousand of population, is given by the following formula in the Tables.

$$\text{Crude Marriage Rate (CMR)} = \frac{\Sigma \, _nM_x^m}{\Sigma \, _nP_x^m + \Sigma \, _nP_x^f} \times 1000$$

Where $\Sigma \, _nM_x^m$ is the sum of estimated male marriages in all the age groups x to x - n. $\Sigma \, _nP_x^m$ and $\Sigma \, _nP_x^f$ represent the total population of males and females respectively in all the ages (zero and above). Similar rates have been worked out for female marriages with denominator remaining the same as for males, i.e. the total population irrespective of sex.

On the basis of the approach shown in Tables Ia, Ib, IIa and IIb, the crude marriage rates for male and female marriages corresponding to the PGS population estimates in 1968 and 1971 respectively are as given below :

Year	Male	Female
1968	7.8	7.9
1971	7.2	7.5

The above statement shows that the estimates of Crude Marriage Rate in Pakistan, worked out indirectly from the PGS 1968 and 1971 population distribution, is between 7 and 8 per thousand of population. Slight variation between the estimates based on male and female marriages can be attributed to the variations in the respective population distribution by marital status and the indirect approach used in the study. The lower rates for 1971 as compared with the 1968 rates correspond with variations in other estimates which have been described earlier for the two years respectively.

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[4]For further overall description of age at marriage and other demographic variables in Pakistan *see* [1]. It may, however, be pointed out here that the direct estimates, reported to above, are based on marriage registration forms and thus are cross-sectionals estimates, for one calendar year. The indirect estimates from the nuptiality table represent the nuptiality experience of PGS population in different calendar years.

As has been described above, the crude marriage rate takes the total population of males as well as females in the denominator. Obviously this rate is very crude because the total population in all ages is not at the risk of marriage in a year. A relatively better measure is the General Marriage Rate (GMR) which is analogous to the General Fertility Rate (GFR). The General Marriage Rate take the unmarried population (never married + widowed + divorced, in ages 10 and over) of only one sex in the denominator. These rates, as worked out from the PGS 1968 and 1971 population distributions, are given below : .

Year	Male	Female
1968	45.3	66.5
1971	43.2	66.1

The above statement shows that the female General Marriage Rate is **more** than fifty percent higher than the corresponding rate for males. This is **primarily** due to the fact that the population of unmarried males of age 10-and-over is **nearly** fifty percent more than the population of unmarried females, the estimates of **male** and female marriages being almost equal.

Discussion

The Net Nuptiality Tables and the other estimates derived from them, as presented in this study, are based on two types of data drawn from the PGS (i) the age specific mortality schedule, taken from the PGS-based life tables corresponding to deaths occurring during the years 1968 and 1971, and (ii) the distribution of population by marital status, which has been used to provide proportions of ever-married persons at different ages. The estimates so arrived at are the resultant of nuptiality conditions of different calendar years in the past and the mortality conditions of the years 1968 and 1971. It may be pointed out here that the use of these two sources does not imply that in preparing the Net Nuptiality Tables, the mortality effect has been taken twice : one relating to the past calendar years and the other from cross-sectional mortality as given by (1968 and 1971) life tables. In fact, we have first compensated for the past mortality effect when the estimated ever-married survivors are divided by the probability of surviving to get the original group of which these are the survivors (*see* methodology in Appendix). The substraction from this group of the given ever-married survivors existing at the beginning of the preceding age interval then provided the estimate of those persons who got married subsequently. These marriages were then used to estimate marriage probabilities which were subsequently used in conjunction with death probabilities drawn from life table to yield results in the Net Nuptiality Tables. Thus it is clear that the attrition effect due to mortality has been taken only once, and that was from the cross-sectional age-specific death rates from the PGS.

There are, therefore, two basic assumptions involved in the preparation of the Net Nuptiality Table. First, the mortality patterns of married and unmarried persons are taken to be the same. Second, the proportions single (or ever-married) existing in different age and sex groups in the PGS population of 1968 and 1971, are taken to be the same in the hypothetical cohort of the PGS-based life table.

The Net Nuptiality Tables presented in this study, having been based on the PGS data, may suffer from all those limitations which are associated with the reporting and coverage of data and also with the estimation of results obtained through sampling procedures. Apart from the errors inherent in the PGS data, the indirect procedure used for estimating marriages and the corresponding nuptiality probabilities, obviously, have given approximate results. However, in the absence of direct statistics on frequency of marriages through registration, the indirect

procedures provide useful substitutes for estimating the required results from the data available in the existing form.

The estimates provided in this study may be considered as approximate representation of the nuptiality conditions in Pakistan under certain assumptions. The main objective was, however, to provide the indirect estimates of various measures on the marriage patterns in Pakistan which otherwise cannot be arrived at directly because of non-availability of statistics on the occurrence of marriages. These measures are useful for comparing the nuptiality conditions in Pakistan with those in the other countries of the world, and also for carrying out a comparison over time within Pakistan.

These estimates, being reflective of conditions of nuptiality experienced by different age groups of the PGS population, extending to different calander years in the past, and the mortality conditions as of 1968 and 1971, do not represent the combined effect of the current levels of age specific nuptiality and mortality. However, as we have already mentioned in a previous section, the direct estimates of average age at marriage, as available from some other studies for Karachi, Lahore and some rural areas, out of data provided in the marriage registration forms, are very close to the corresponding estimates arrived at in this study. This comparison may not be suggesting any variation in the overall average. Even then the current patterns of entry into the marital union at different ages may not be the same as reflected by the results of the present study. In spite of these limitations, the results of the present study can be useful for further demographic research, such as the working out of the likely population composition by marital status in the future, under the same nuptiality and mortality conditions as in the present study and also with simulated changes over time in the age specific nuptiality and mortality.

Appendix

Nuptiality Tables for 1968 and 1971 (Methodology)

For the purposes·of our study we have taken the death probabilities (1968 and 1971 average) and other life table functions from the recently constructed life tables by Farooqui and·Alam [10]. From the same PGS data, estimates of nuptiality probabilities have been worked out on the basis of population distribution by marital status as given by the PGS for the years 1968 and 1971.

For arriving at estimates of marriage probabilities, the information on incidence of marriage by age in a year should ideally come from records of marriages registered, which could ultimately lead to estimates of marriage probabilities in a specific period. Since data on marriages are not available in the form of statistics, estimates of age wise marriages have been worked out with the help of life table functions and the proportions single at each age. This procedure is briefly described below :

(*a*) For each sex the population distribution by marital status having been given in five-year age agroups, the population of single persons out of the total population in each age group was computed and was considered as the central value at mid-period. Out of these values, corresponding values for single years were linearly interpolated.

(*b*) From the corresponding abridged life table for each sex, the values of survivors at exact age (l_x) were linearly interpolated to vigive corresponding values for intermediate years.

(*c*) The ratios of singles worked out earlier were then multiplied with the number of survivors at each age as estimated on the basis of the above mentioned approach, which provided estimates of single survivors to the respective ages (l'_x) for the respective nuptiality table.

The procedure developed for arriving at estimates of marriages during different age intervals in a hypothetical cohort has been described in detail in or our earlier study. However, for the convenience of the readers, it is being described again

l_x number of survivors at exact age x (from life table)

l'_x number of single survivors at exact age x as arrived at through the above described procedure.

$l_x - l'_x$ number of over-married persons surviving at exact age x.

$P_x = \dfrac{l_{x+1}}{l_x}$ = the probability of survival from exact age x to x - 1.

Now, $l_x - l'_x$ being the ever-married survivors at age x. the number of ever-married persons surviving at age x+1 is $l_{x+1} - l'_{x+1}$. The estimate of original group (ever-married singles) of which $l_{x+1} - l'_{x+1}$ are the survivors is given by $\dfrac{l_{x+1} - l'_{x+1}}{P_x}$. The difference of this value and the ever-married survivors

at age $x+1$ gives the number of persons who get married[1] in the age interval x and $x+1$ we may designate as M_x. Thus

$$M_x = \frac{l'_{x+1} - l'_{x+1}}{P_x} - (l_x - l'_x)$$

The probability of getting married between ages x and $x+1$ is given by n_x which is derived by the following formula :

$$n_x \quad \frac{M_x}{l'_x} = \frac{\frac{l'_{x+1} - l'_{x+1}}{P_x} - (l_x - l'_x)}{l'_x}$$

The set of age specific nuptiality probabilities worked out by the above formula along with age specific mortality probabilities (q_x) drawn from the life table generate the Net Nuptiality Table by working out attritions from a hypothetical cohort of single persons (Radix) due to deaths and marriages. Following is a brief description of the columns of the Net Nuptiality Table :

Column No.	Symbol	Description
1	$1000\, n_x$	Probability of marriage between ages x and $x+1$, expressed as number marrying of 1000 single persons at age x.
2	$1000\, q_x$	Probability of death between the ages x and $x+1$, expressed as number dying of 1000 single persons at age x.
3	l'_x	Number of single persons surviving at exact age x.
4	d'_x	Deaths of single persons at age x given by the formula : $d'_x = q_x (1 - \frac{n_x}{2})\, l'_x$
5	v'_x	Marriages at age x, given by the formula : $v'_x = l'_x - d'_x - l'_{x+1}$
6	N'_x	Marriage at age x and all later ages, given by the formula : $N'_x = \Sigma v'_x.$
7	$\% N'_x$	Percentage of N'_x out of corresponding single survivors l'_x.
8	L'_x	Person-years as single persons lived between the age x and $x+1$, given by the formula : $L'_x = \frac{1}{2}(l'_x + l'_{x+1}) + \frac{1}{24}(d'_{x+1} + v'_{x+1} - d'_{x-1} - v'_{x-1})$

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[1] One of the basic assumptions in this approach is that the mortality pattern of ever-married and unmarried persons is the same.

Column No.	Symbol	Description

9   T'_x Person-years lived as single persons at age x and all later ages, given by the formula

$$T'_x = \Sigma L'_x$$

10    $°e'_x$ Average expected years to marriage from age x, given by the formula :

$$°e'_x = \frac{T'_x}{l'_x}$$

Following the procedure described above, separate Net Nuptiality Tables for males and females have been constructed for the year 1968 and 1971, out of the PGS data for the corresponding years.

Appendix Table Ia

Net Nuptiality Table for Males in Pakistan, 1968

Age x	Of 1,000 alive and single at start of age x		Of 100,000 born alive		First Marriages			Stationary population		Years of single life remaining at start of age of (°e'x)
	Number marrying at age x (1,000 nₓ) (Un smoothed)	Number dying at age x (1,000 qₓ)	Alive and single at start of age x (l'ₓ)	Deaths at age x while single (d'ₓ)	At age x (vₓ)	At age x and all later ages (N'ₓ)	Per cent at age x and all later ages (%N'ₓ)	At age x L'ₓ	At age x and all later ages (T'ₓ)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
0		187.26	100,000	18,726	—	77,183	77.18	91,415	2,200,664	22.00
10	1.76	1.56	81,158	125	47	77,183	95.10	81,074	1,329,665	16.38
11	.58	1.54	80,986	125	47	77,136	95.25	80,918	1,248,591	15.42
12	.58	1.53	80,814	124	472	77,089	95.39	80,551	1,167,673	14.45
13	5.90	1.55	80,218	124	897	76,617	95.51	79,726	1,087,122	13.55
14	11.34	1.58	79,197	124	896	75,720	95.61	78,687	1,007,396	12.72
15	11.45	1.69	78,177	131	895	74,824	95.71	77,664	928,709	11.88
16	11.60	1.69	77,151	129	.893	73,929	95.82	76,713	851,045	11.03
17	11.73	1.68	76,129	127	2,659	73,036	95.94	74,883	774,332	10.17
18	36.31	1.69	73,343	122	4,419	70,377	95.96	71,145	699,449	9.54
19	64.30	1.69	68,802	112	4,413	65,958	95.87	66,541	628,304	9.13
20	68.70	1.84	64,277	114	4,404	61,545	95.75	62,019	561,763	8.74
21	73.76	1.84	59,759	69	4,434	57,141	95.62	57,529	499,744	8.36
22	79.65	1.84	55,256	98	4,931	52,707	95.39	52,786	442,215	8.00
23	98.27	1.85	50,227	88	5,468	47,776	95.12	47,470	389,429	7.75
24	122.52	1.85	44,671	78	5,458	42,308	94.71	41,901	341,959	7.66

Table Ia—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
25	139.59	1.99	39,135	73	5,447	36,850	94.16	36,373	300,058	7.67
26	162.19	2.00	33,615	62	5,436	31,403	93.42	30,798	263,685	7.84
27	193.51	2.00	28,117	51	3,835	25,967	92.35	26,061	232,887	8.28
28	158.35	2.02	24,231	45	2,708	22,132	91.34	22,807	206,826	8.54
29	133.53	2.01	21,478	40	2,701	19,424	90.44	20,107	184,019	8.57
30	135.77	2.38	18,737	42	2,695	16,723	89.25	17,368	163,912	8.75
31	168.69	2.39	16,000	35	2,689	14,028	87.68	14,608	146,544	9.16
32	202.77	2.40	13,276	29	2,008	11,339	85.41	12,201	131,936	9.94
33	178.84	2.39	11,239	25	1,328	9,331	83.02	10,534	119,735	10.65
34	134.53	2.41	9,886	22	1,323	8,003	80.95	9,214	109,201	11.05
35	155.13	2.86	8,541	22	1,321	6,680	78.21	7,870	99,987	11.71
36	183.66	2.87	7,198	19	1,317	5,359	74.45	6,507	92,117	12.80
37	225.01	2.89	5,862	15	779	4,042	68.95	5,420	85,610	14.60
38	153.71	2.89	5,068	14	238	3,263	64.38	4,919	80,190	15.82
39	49.42	2.91	4,816	14	238	3,025	62.81	4,690	75,271	15.63
40	52.15	3.64	4,564	17	236	2,787	61.06	4,438	70,581	15.46
41	54.98	3.65	4,311	16	236	2,551	59.17	4,185	66,143	15.34
42	58.39	3.67	4,059	15	233	2,315	57.03	3,935	61,958	15.26
43	61.40	3.67	3,811	14	228	2,082	54.63	3,690	58,023	15.23
44	64.16	3.69	3,569	13	229	1,854	51.95	3,448	54,333	15.22
45	68.83	4.92	3,327	15	228	1,623	48.84	3,206	50,885	15.29
46	73.93	4.94	3,084	14	227	1,397	45.30	2,964	47,679	15.46
47	79.85	4.98	2,843	13	232	1,170	41.15	2,721	44,715	15.73
48	89.30	4.98	2,598	12	237	938	36.10	2,474	41,994	16.16
49	100.89	5.03	2,349	12	234	701	29.84	2,226	39,520	16.82
50	111.75	7.23	2,103	1,636	234	467	22.21	37,294	37,294	17.73

Appendix Table 1b

Net Nuptiality Table for Females in Pakistan, 1968

Age x	Of 1,000 alive and single at start of age x		Of 100,000 born alive					Stationary population		Years of single life remaining at start of age of age ($^\circ e'_x$)
	Number marrying at age x ($1,000\,n_x$) (Un smoothed)	Number dying at age x ($1,000\,q_x$)	Alive and single at start of age x (l'_x)	Deaths at age x while single (d'_x)	First Marriages			At age x L'_x	At age x and all later ages (T'_x)	
					At age x (v_x)	At age x and all later ages (N_x)	Per cent at age x and all later ages ($\%N'_x$)			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
0	—	180.58	100,000	18,085	—	78,395	78.39	92,544	1,655,445	16.55
10	3.85	3.04	81,629	248	125	78,395	96.03	81,448	805,162	9.86
11	1.54	3.05	81,256	248	124	78,270	96.33	81,171	723,714	8.90
12	1.55	3.06	80,884	248	2,548	78,146	96.62	79,687	642,543	7.95
13	32.75	3.08	78,088	237	4,963	75,598	96.82	75,587	562,856	7.21
14	68.2(	3.08	72,888	217	4,952	70,635	96.91	70,301	487,269	6.69
15	73.26	3.15	67,719	205	4,937	65,683	97.00	65,145	416,968	6.16
16	79.01	3.16	62,577	190	4,920	60,746	97.08	60,086	351,823	5.63
17	85.75	3.16	57,467	174	6,500	55,826	97.15	54,2560	291,737	5.08
18	128.25	3.18	50,793	152	8,070	49,326	97.12	46,744	237,477	4.68
19	189.94	3.18	42,571	122	8,048	41,256	96.92	38,482	190,733	4.48
20	234.33	3.29	34,401	100	8,022	33,208	96.54	30,340	152,251	4.43
21	305.80	3.30	26,279	74	8,098	25,186	95.84	22,059	121,911	4.64
22	448.00	3.30	18,107	47	4,864	17,088	94.38	15,394	99,852	5.52
23	368.90	3.32	13,196	36	1,956	12,224	92.64	12,078	84,458	6.42
24	174.49	3.32	11,204	34	1,944	10,268	91.65	10,214	72,380	6.46

—*Continued*

Appendix Table 1b—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
25	211.14	3.47	9,226	29	1,938	8,324	90.23	8,242	62,166	6.74
26	267.53	3.49	7,259	22	1,931	6,386	87.98	6,254	53,924	7.43
27	364.49	3.48	5,306	16	1,247	4,455	83.97	4,618	47,670	8.99
28	308.93	3.52	4,043	12	569	3,208	79.35	3,724	43,052	10.65
29	164.36	3.53	3,462	11	566	2,639	76.23	3,174	39,328	11.36
30	196.53	3.75	2,885	10	564	2,073	71.86	2,598	36,154	12.54
31	244.48	3.77	2,311	8	561	1,509	65.30	2,016	33,556	14.52
32	323.19	3.77	1,742	6	317	948	54.42	1,560	31,540	18.11
33	224.10	3.81	1,419	4	71	631	44.47	1,372	29,980	21.13
34	52.08	3.80	1,344	5	70	560	41.67	1,307	28,608	21.29
35	55.95	4.14	1,269	5	70	490	38.62	1,232	27,301	21.52
36	58.63	4.16	1,194	5	70	420	35.18	1,156	26,069	21.84
37	62.56	4.18	1,119	5	43	350	31.28	1,093	24,913	22.27
38	41.08	4.21	1,071	5	16	307	28.67	1,060	23,820	22.24
39	16.19	4.22	1,050	4	17	291	27.72	1,049	22,760	21.68
40	6.80	4.73	1,029	5	16	274	26.63	1,018	21,711	21.10
41	25.79	4.75	1,008	5	16	258	25.60	998	20,693	20.53
42	16.21	4.79	987	5	29	242	24.52	971	16,695	19.96
43	30.43	4.79	953	5	45	213	22.35	928	18,724	19.65
44	50.94	4.84	903	4	45	168	18.61	879	17,796	19.71
45	52.69	5.65	854	5	44	123	14.41	830	16,917	19.81
46	54.66	5.68	805	5	44	79	9.82	780	16,087	19.99
47	59.52	5.70	756	4	21	35	4.63	742	15,307	20.25
48	28.73	5.75	731	4	—	14	1.92	728	14,565	19.93
49		5.77	727	—	4	14	1.93	725	13,837	19.04
50		7.13	723	713	5	10	1.39	13,112	13,112	18.14

Appendix Table IIa

Net Nuptiality Table for Males in Pakistan, 1971

Age x	Of 1,000 alive and single at start of age x		Of 100,000 born alive		First Marriages			Stationary population		Years of single life remaining at start of age of (°e'_x)
	Number marrying at age x (1,000 n_x) (Un smoothed)	Number dying at age x (1,000 q_x)	Alive and single at start of age x (l'_x)	Deaths at age x while single (d'_x)	At age x (v'_x)	At age x and all later ages (N'_x)	Per cent at age x and all later ages ($\%N'_x$)	At age x L'_x	At age x and all later ages (T'_x)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
0	—	187.26	100,000	18.726	—	77,213	77.22	91,415	2,152,869	21.53
10	3.47	1.54	80,993	125	112	77,213	95.34	80,880	1,281,870	15.83
11	1.40	1.54	80,756	124	112	77,101	95.48	80,655	1,200,990	14.88
12	1.39	1.53	80,520	123	518	76,989	95.62	80,234	1,120,335	3.92
13	6.49	1.55	79,879	124	021	76,471	95.74	79,374	1,040,101	10.02
14	11.71	1.58	78,834	124	921	75,550	95.84	78,312	960,727	12.19
15	11.86	1.69	77,789	131	919	74,629	95.94	77,264	882,415	11.05
16	11.96	1.69	76,739	129	918	73,710	96.06	76,296	805,151	10.50
17	12.15	1.68	75,692	126	2,845	72,792	96.17	74,367	728,855	9.63
18	39.18	1.69	72,721	121	4,769	69,947	96.19	70,355	654,488	9.00
19	70.40	1.69	67,831	111	4,763	65,178	96.09	65,393	584,133	8.62
20	75.74	1.84	62,957	112	4,754	60,415	95.97	60,523	518,740	8.24
21	81.93	1.84	58,091	103	4,745	55,661	95.82	55,675	458,217	7.89
22	89.22	1.84	53,243	94	4,959	50,916	95.63	50,734	402,542	7.56
23	103.01	1.85	48,190	85	5,169	45,957	95.37	45,571	351,808	7.30
24	120.53	1.85	42,936	75	5,161	40,788	95.00	40,316	306,237	7.14

—Continued

Appendix Table IIa—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
25	137.03	1.99	37,700	70	5,150	35,627	94.51	35,088	265,921	7.06
26	158.72	2.00	32,480	60	5,140	30,477	93.84	29,832	230,833	7.11
27	188.60	2.00	27,280	50	4,017	25,337	92.88	25,153	201,001	7.37
28	173.18	2.02	23,213	43	2,901	21,320	91.85	21,694	175,848	7.58
29	143.23	2.01	20,269	38	2,894	18,419	90.88	18,802	154,154	7.61
30	167.10	2.38	17,337	38	2,888	15,525	89.55	15,873	135,352	7.81
31	200.61	2.39	14,411	32	2,880	12,637	87.69	12,916	119,479	8.29
32	250.90	2.40	11,499	25	1,966	9,757	84.85	10,427	106,563	9.27
33	207.09	2.39	9,508	21	1,056	7,791	81.95	8,932	96,146	10.12
34	125.37	2.41	8,431	19	1,053	6,735	79.89	7,895	87,204	10.35
35	143.37	2.86	7,359	20	1,050	5,682	77.22	6,824	79,309	10.78
36	167.28	2.87	6,289	17	1,047	4,632	73.66	5,740	72,485	11.53
37	200.77	2.89	5,225	14	640	3,585	68.62	4,864	66,745	12.78
38	140.24	2.89	4,571	12	238	2,945	64.43	4,429	61,881	13.54
39	55.08	2.91	4,321	13	234	2,707	62.65	4,198	57,452	13.30
40	57.69	3.64	4,074	15	235	2,473	60.71	3,949	53,254	13.08
41	61.72	3.65	3,824	14	233	2,238	58.53	3,704	49,305	12.90
42	65.42	3.67	3,577	13	298	2,005	56.06	3,427	45,601	12.75
43	91.55	3.67	3,266	12	358	1,707	52.27	3,083	42,174	12.92
44	124.31	3.69	2,896	10	358	1,349	46.59	2,712	39,091	13.50
45	142.01	4.92	2,528	12	356	991	39.20	2,344	36,379	14.39
46	165.28	4.94	2,160	10	354	635	29.40	1,971	34,035	15.76
47	197.67	4.98	1,796	8	188	281	15.65	1,674	32,064	17.86
48	117.50	4.98	1,600	8	23	93	5.82	1,585	30,390	19.00
49	14.66	5.03	1,569	8	24	70	4.47	1,553	28,805	18.36
50	15.62	7.23	1,537	1,491	23	46	3.00	27,525	27,252	17.73

Appendix Table. IIb

Net Nuptiality Table for Females in Pakistan, 1971

Age x	Of 1,000 alive and single at start of age x		Of 100,000 born alive		First Marriages			Stationary population		Years of single life remaining at start of age ($°e'_x$)
	Number marrying at age x (1,000 n_x) (Un smoothed)	Number dying at age x (1,000 q_x)	Alive and single at start of age x (l'_x)	Deaths at age x while single (d'_x)	At age x (v_x)	At age x and all later ages (N'_x)	Per cent at age x and all later ages ($\%N'_x$)	At age x L'_x	At age x and all later ages (T'_x)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
0	—	180.58	100,000	18,058	—	77,835	77.83	92,544	1,638,981	16.39
10	9.35	3.04	81,185	246	305	77,835	95.88	80,923	788,698	9.72
11	3.79	3.05	80,634	246	302	77,530	96.15	80,467	707,775	8.78
12	3.79	3.06	80,086	245	2,867	77,228	96.44	78,743	627,308	7.84
13	37.37	3.08	76,074	233	5,419	74,361	96.61	74,253	548,565	7.13
14	76.17	3.08	71,322	212	5,406	68,942	96.67	68,510	474,312	6.65
15	81.35	3.15	65,704	199	5,390	63,536	96.70	62,907	405,802	6.18
16	90.98	3.16	60,115	181	5,373	58,146	96.73	57,380	342,895	5.71
17	98.63	3.16	54,561	164	6,430	52,773	96.73	51,350	285,515	5.24
18	134.30	3.18	47,967	143	7,482	46,343	96.62	44,196	234,165	4.89
19	185.84	3.18	40,342	116	7,461	38,861	96.33	36,550	189,969	4.71
20	228.00	3.29	32,765	96	7,436	31,400	95.84	28,995	153,419	4.69
21	295.21	3.30	25,233	71	7,412	23,964	94.97	21,375	124,424	4.94
22	418.31	3.30	17,750	47	4,683	16,552	93.25	15,157	103,049	5.81
23	359.99	3.32	13,020	35	1,969	11,869	91.16	11,904	87,892	6.75
24	178.65	3.32	11,016	34	1,956	9,900	89.87	10,020	75,988	6.90

—*Continued*

Appendix Table IIb—Continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
25	217.15	3.47	9,026	28	1,950	7,944	88.02	8,036	65,968	7.31
26	277.25	3.49	7,048	22	1,944	5,994	85.05	6,034	57,932	8.22
27	383.32	3.48	5,082	15	1,216	4,050	79.70	4,406	51,898	10.22
28	136.29	3.52	3,851	12	492	2,834	73.60	3,568	47,492	12.34
29	147.00	3.53	3,347	11	489	2,342	69.98	3,097	43,924	13.13
30	172.11	3.75	2,847	10	487	1,853	65.09	2,599	40,827	14.34
31	207.66	3.77	2,350	8	485	1,366	58.13	2,095	38,228	16.27
32	261.72	3.77	1,857	6	281	881	47.45	1,697	36,133	19.46
33	178.98	3.81	1,570	6	72	600	38.22	1,522	34,436	21.94
34	48.93	3.80	1,492	6	72	528	35.39	1,453	32,914	22.06
35	51.63	4.14	1,414	6	72	456	32.25	1,375	31,461	22.25
36	53.90	4.16	1,336	5	71	384	28.75	1,298	30,086	22.52
37	57.19	4.18	1,259	5	64	313	24.87	1,224	28,788	22.87
38	53.79	4.21	1,190	5	54	249	20.93	1,160	27,564	23.17
39	48.63	4.22	1,131	5	54	195	17.25	1,102	26,404	23.35
40	51.31	4.73	1,072	5	54	141	13.16	1,042	25,302	23.61
41	53.31	4.75	1,012	5	53	87	8.59	983	24,260	23.95
42	55.50	4.79	955	5	27	34	3.56	937	23,277	24.38
43	30.34	4.79	923	5		7	0.76	920	22,340	24.21
44	1.09	4.84	918	5		7	0.77	916	21,420	23.34
45	1.10	5.65	913	5	1	7	0.77	910	20,504	22.46
46	1.10	5.65	907	5	1	6	0.67	904	19,594	21.61
47	1.11	5.70	901	5	1	5	0.56	898	18,690	20.75
48	1.12	5.75	895	5	1	4	0.45	892	17,792	19.88
49	1.13	5.77	889	5	1	3	0.34	886	16,900	19.01
50	1.14	7.13	883	881	1	2	0.23	16,014	16,014	10.14

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