Socioeconomic Changes, Women's Autonomy, and Timing of First Birth in a Semi-Urban Community in Nepal

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Introduction

Previous studies have shown the influence of social transformations such as urbanization, education and income on the first birth interval (Thorton and Fricke, 1989; Tsuya and Choe, 1994). These researchers have argued that such social transformations provide more autonomy to young boys and girls in the mate selection process. These changes could facilitate quicker intimacy among couples. Linking conjugal intimacy to coital frequency through romantic marriage, Rindfuss and Morgan (1983) argued that in the case of romantic marriage (woman choosing her own spouse) the relationship between husband and wife will be very intimate resulting in a higher level of coital frequency and thus greater risk of an early first birth. They termed it as the "quiet revolution" in Asia. Fricke and Teachman (1993) showed further evidence of a decline in first birth interval among Tamangs residing in the high mountains in central Nepal and attributed this decline to marriage and cultural factors. Previous studies have also demonstrated the importance of ethnicity factors on the timing of

CONTRIBUTIONS TO NEPALESE STUDIES 25 (SPECIAL ISSUE): 129-143 (JULY 1998)

marriage and the timing of first birth (Hirschman, 1985; Rindfuss et al., 1983; Thapa, 1989 and 1997; Fricke and Teachman, 1993).

In this paper I attempt to broaden the understanding of the dynamics of the first birth interval. Using micro-demographic data gathered from a single ethnic group, the Newars of Kirtipur in the Kathmandu Valley, this paper examines the influence of family and individual experience variables on the timing of the first birth in the context of social transformation. More specifically, the paper focuses on: (i) the overall pattern of first birth intervals, (ii) the trends in first birth intervals across birth cohorts and marriage cohorts, and (iii) determinants of the observed patterns and trends of the birth intervals.

Sociodemographic and Cultural Factors: Theoretical Expectations

Age at marriage, respondent's education, opportunities for employment in the formal sector, respondent's outside exposure, pattern of mate selection and marriage cohort are all likely to influence the timing of first birth. The causal mechanism of each factor is described below.

Age at Marriage

Various studies have revealed that age at marriage has a very strong direct effect on length of the first birth interval (Hirschman 1985; Kallan and Udry 1986; Fricke and Teachman 1993). Women who marry late tend to have their first child sooner after marriage than young brides. This may be due partly to the increased fecundity of brides and grooms and to the catch-up effect of marrying later (Chen and Morgan, 1991; Yang and Feng, 1994). Rindfuss and Morgan (1983: 263) noted that, "As age at marriage increases to a woman's early 20s her early married years coincide with her most fecund period."

Education

Education is another important factor that explains the variation in the first birth interval (Rindfuss et al., 1980; Hirschman, 1985; Kasarda et al., 1986; Kravdal, 1994). Education affects fecundity through better health and nutrition and lower prevalence of disease. Fetal loss rates are also likely to be lower for more educated women. Furthermore, coital frequency varies with education (Kallan and Udry, 1986). Hirschman (1985: 38) observed: "Changes in aspirations, a shift

towards autonomy in the choice of a marriage partner, and a desire for some period of independence before settling down are some of the possible consequences of education on the timing of family formation." More educated women tend to choose their own spouses due to exposure and interactions during their educational attainment; this results in quicker intimacy, more frequent coitus and less waiting time to first birth.

Marriage Cohort

A cohort refers to a group of people experiencing a particular event during the same period of time. Since the effects of any event vary with women's age, the meaning and significance of such events might differ among marriage cohorts. Ryder (1965) argues that generational change is likely to be dependent upon successive cohorts being exposed to new influences and opportunities. Furthermore, the environment in which women are socialized might differ across marriage cohorts. This changing social environment may lead to differences in the occurrence of events. One may expect changes in behavior across marriage cohorts of women to be due to changes in the socioeconomic environment of society over time. New social transformations would significantly influence the younger cohort. Thus, the younger marriage cohort is expected to have shorter intervals to first birth.

Outside Exposure Before Marriage

Outside exposure before marriage is a factor associated with autonomous choice of a spouse. If women have lived outside their native home for more than one month, it may be hypothesized that they will have increased participation in the mate selection process. The greater their outside exposure before marriage, the more autonomous they will be in the choice of their spouse. This autonomy may lead to quick intimacy among couples and hence shorter intervals to first birth.

Father's Work Experience

Parental characteristics, such as a father's participation in wage labor before his daughter's marriage is often associated with autonomous choice of spouse (Fricke and Teachman, 1993). If the father is involved in wage labor he is more likely to recognize the importance of his daughter's opinion in the selection of her marriage partner.

Contraception

Previous studies have indicated that Nepali women are likely to use contraception to limit births only when they attain their desired family size, with at least one surviving son (Acharya, 1998; Tuladhar, 1989). In 1981 only 0.3 percent of currently married women with no living children were using contraception (Tuladhar, 1989). Negligible use of contraception prior to first birth in Nepal is governed by a strong value system. Childbearing is essential for a woman to obtain social status and to prove herself fertile, as well as to continue the paternal lineage. The mother-in-law constantly pressures the newlywed couple to have a child. The women of the household, especially the mother-in-law, will be watching for any sign of pregnancy (Bennett, 1976).

A first birth also reduces the anxiety of possible remarriage by the husband, no matter who is responsible for childlessness. A childless woman is pitied and looked down upon by society (Tuladhar, 1989; Niraula and Morgan, 1996). In view of these social values contraception is rarely practiced to delay a first birth. In a society in which premarital sex remains a socially unacceptable practice, contraception and premarital conception are of little significance in explaining variation in the first birth interval.

The Study Community

Individual and family behavior are influenced by the socioeconomic conditions that surround them. In this section I briefly describe the social transformation of Kirtipur and link this to the changing pattern of the first birth interval. Chithubihar Village Development Committee (VDC), one of the VDCs of Kirtipur, a semi-urban location, is the study area. Since the study area is widely known as Kirtipur, I will hereafter refer to this area as Kirtipur.

According to the population census of 1991 this settlement consists of 805 households, with a total population of 4,538. The inhabitants are mainly Newars with few from other ethnic communities. Thus, this is a homogenous group with respect to norms and values regarding social practices. Until recently, agriculture was the major occupation in Kirtipur; about 90 percent of residents were involved in agriculture. In recent years a shift to industrial and service sectors has taken place. The proximity to Kathmandu, the capital city, and to Patan, another local town, has provided opportunities for alternative jobs.

One remarkable change is in the field of education. Access to education has increased sharply due to the rise in the number of schools. Furthermore, the traditional practice of not sending girls to school has been abandoned almost altogether, leading to an increase in female literacy.

In Kirtipur, the family system is also undergoing changes. The traditional joint family system is gradually giving way to the nuclear family. Furthermore, while marriage arranged by parents and/or seniors continues to be the most common practice, marriage by one's own choice is in practice. In essence, marriage has shifted from parental arrangement to joint decision making between parents and children; children have gained autonomy in the choice of marriage partners. The opinions of both sons and daughters are sought and thus, this can be treated as a step toward women's autonomy. Once the marriage alliance is finalized, boys and girls are allowed to meet freely with each other. Elopement is also practiced; during the survey 18 cases of elopement were recorded.

In Kirtipur, ownership of consumer durables was almost non-existent a few years ago. In recent years the pace of acquisition has increased rapidly so that now most households own a radio/recorder and/or television. Thus, people are exposed to modern communication systems and entertainment media. As a result the lifestyle of the people in Kirtipur has undergone changes. Furthermore, non-governmental organizations are active in launching and supporting development projects in the area. One program is the establishment of a child care center, a move which facilitates women's involvement in income generating activities. These various socioeconomic transformations combined with the social context of marriage are expected to influence the timing of the transition to motherhood in the study community.

Data

The data for the present micro-demographic study come from a retrospective survey of Kirtipur undertaken during the months of October and November, 1993. In-depth interviews of selected cases were also conducted and supplemental information was gathered through informal conversations with the village head.

The 1990 voters' list prepared by the National Election Commission for Nepal's General Election was used to randomly select 200 households (out of a total 805) from all nine wards. Information on education, work, residence, outside exposure, child bearing, parents'

backgrounds and the timing of these experiences was collected using a structured questionnaire. All female residents 12 years of age and above were interviewed. This yielded 487 women, both married and never married.

In this paper, analyses are confined to 301 ever-married women because, as previously stated, there is little premarital sex or physical intimacy of any kind between boys and girls (Thapa, 1989; Dahal, 1993); and, in the event of premarital pregnancy, marriages are negotiated quickly (Fricke and Teachman, 1993). The analysis will be confined to only the first birth interval as factors associated with birth intervals vary by birth order (Rindfuss et al., 1989).

Over 90 percent of Kirtipur residents speak only Newari language, their mother tongue (which is different from the national language, Nepali). The interviews were, therefore, conducted by experienced and qualified Newari interviewers. This, combined with careful supervision, helps to ensure the quality of the data.

In order to gather quality data the interviewers were instructed to check the consistency of data and to cross examine if found inconsistent. Repeated visits were made to clarify the inconsistencies and to make necessary corrections. Moreover, important social events were used as reference points to aid in the recollection of personal events. Recalling the dates of events in this manner reduces the chances for error.

Since the data come from retrospective accounts of marriage and first births, events which may be afflicted by recall lapse, there could be some concern regarding the quality of the data. Measurement error in data could be due to forward displacement of first birth date, backward displacement of marriage date and omission of early births that died (Kallan and Udry, 1986). I assume measurement errors are distributed randomly across the analytical groups of interest within this fairly homogenous population and that this does not systematically affect these analyses (Fricke and Teachman, 1993; Rindfuss and Morgan, 1983).

Results

Age at Marriage and Age at First Birth

Table 1 shows mean age at first marriage, mean age at first birth, and the absolute difference between these two ages. On average, women in Kirtipur marry at 18.44 years of age. Cohort comparisons

reveal a significant rise in the average age at marriage from 16.16 among the eldest cohort to 19.46 among the youngest cohort. (For the cohort 1970-79, age at marriage needs to be carefully interpreted due to age at marriage truncation bias).

Table 1 Mean age at marriage (AFM) and age at first birth by birth (AFB) cohort, Kirtipur, 1993

Birth Cohort	Mean Age at First Marriage	Mean Age at First Birth	Absolute Difference between AFM and AFB
1970-1979	18.21	19.07	1.13
1960-1969	19.46	20.92	1.46
1950-1959	19.10	21.38	2.28
1949-1949	19.07	21.29	2.22
1930-1939	17.89	21.30	3.41
<1930	16.16	19.57	3.41

The first birth interval—the interval between marriage and the first child—is 16 months. Thus, the average age at first birth is approximately 19.8 years. Table 1 shows a trend toward shorter intervals; the average first birth interval ranged from 1.46 years for the youngest cohort to 3.41 years for the eldest cohort.

Table 2 presents the monthly probability of an ever-married women giving birth to a first child by duration of marriage and by marriage cohort. These values are plotted in Figure 1. The monthly probabilities were obtained using the life table procedure. As the data

Table 2 Life table results for first live birth after marriage by duration of marriage and marriage cohort, Kirtipur, 1993

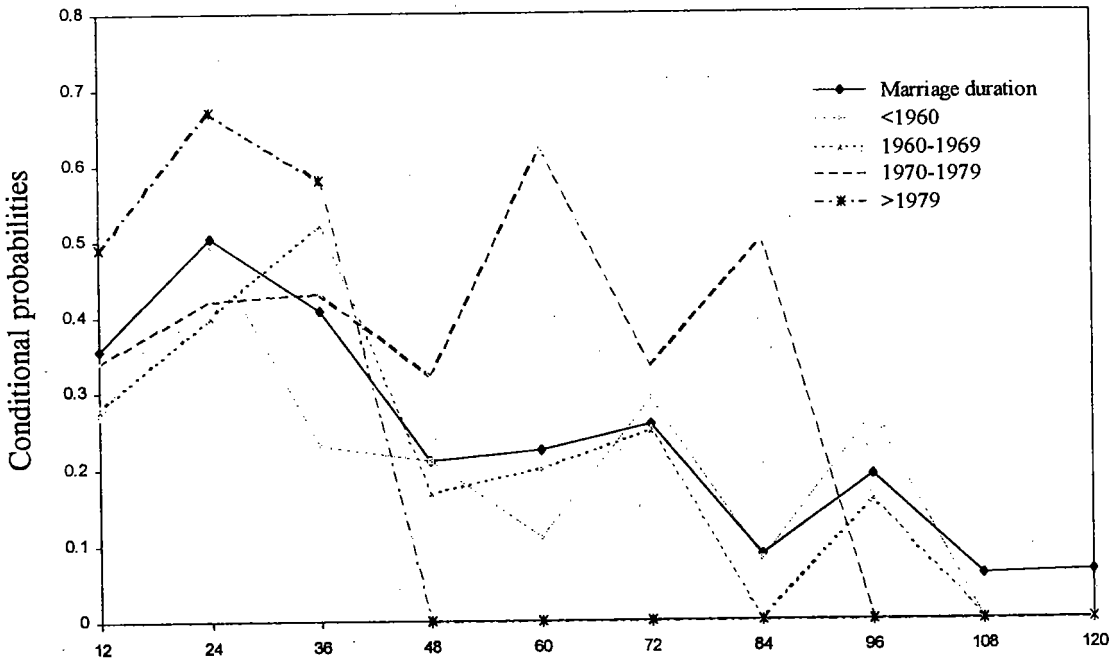
Months Since	Total		<1960		1960-69		1970-79		>1979	
First Marriage	qx	N	Qx	N	Qx	N	qx	N	qx	N
12	.35	301	.27	83	.28	58	.34	61	.49	99
24	.50	191	.49	61	.40	42	.42	40	.67	48
36	.41	91	.23	31	.52	25	.43	23	.58	12
48	.21	52	.21	24	.17	12	.32	13		
60	.22	40	.11	19	.20	10				
72	.26	31								
84	.09	23								
96	.19	21								
108	.06	17								
120	.06	16								

qx = Conditional probability of having first birth after marriage. N = Numbers exposed to risk. Note: Blank cell indicates not applicable.

reveal, conditional probabilities increase during the first year of marriage and tend to peak at 24 months since marriage. The likelihood that a first birth would be highest before the end of the second year of marriage is due to the nine month gestation period. By the second year of marriage, 50 percent of women have given birth; after the third year of marriage the likelihood of a first birth declines steadily.

The patterns of the first two marriage cohorts (<1960 and 1960-1969) are similar with a relatively lower probability of having a first birth in the first 12 months of marriage: a probability of about .27 as compared to a probability of .49 for the most recent marriage cohort. Figure 1 also shows that women who have married recently are more likely to experience the first birth sooner after marriage than women who were married some years ago.

Figure 1 Conditional probability of having a birth among ever married women by marriage duration and marriage cohort, Kirtipur



Multivariate Analysis

Table 3 describes variables used in the multivariate analyses of the timing of first birth. Background variables considered in these analyses are: marriage cohort, father's work experience, respondent's outside exposure before marriage and respondent's literacy. Age at

marriage, choice of spouse and customary gift exchange are the marriage characteristics. Additionally, time, time squared and an interaction term of time x gift exchange are included in the regression analyses.

The division of marriage cohorts into four categories enables me to explain the temporal variation, if any, in the timing of the first birth. The posited direction of and reasons for the effects of father's work experience and respondent's outside exposure before marriage have been previously discussed. As far as education is concerned, women were categorized into those who can read and write and those who cannot at the time of the survey. Nevertheless, a comparison of ever-attended school and literacy variables confirms that, for girls/women, education is acquired prior to marriage.

Table 3 Variables and their distribution used in the analytical models, Kirtipur, 1993

Variable\Definition	Proportion	N
Marriage cohort		
Omitted category <1970	.47	141
Dummy variable 1970-79	.20	61
Dummy variable >1979	.33	9
Father's work experience before respondent's marriage		
0 = No wage labor	.21	63
1 = Wage labor	.79	238
Respondent's outside exposure before marriage		
0 = Never lived outside village	.83	251
1 = Lived outside	.17	50
Respondent's literacy		
0 = Cannot read and write	.76	229
1 = Can read and write	.24	72
Age at marriage		
0 = <19	.54	164
1 = >18	.46	137
Choice of spouse		
0 = Parents/seniors chose	.71	215
1 = Respondent chose	.29	86
Exchange of gifts in marriage process		
0 = No gifts exchanged	.52	158
1 = Gifts exchanged	.48	143

Age of marriage is dichotomized into those married below 19 years of age and those married at age 19 and above. This variable captures the changing fecundity of women with age. Furthermore, this variable measures the effective date of cohabitation; among Kirtipur Newars, unlike some other segments of the population, there is virtually no difference between age of marriage and age of cohabitation. As previously stated, choice of spouse is an indicator of women's autonomy. Finally, if gifts are exchanged in the marriage process, couples tend to become intimate more quickly, thereby having a shorter first birth interval.

Since the paper focuses on the sociodemographic and cultural factors associated with the timing of the first birth, I examine covariates of the first birth interval for non-contracepting women. The dependent variable in the multivariate models is the risk (hazard rate) of having a first birth after marriage, not the risk of first conception. Discrete time event history analysis is used since this method is quite flexible and makes no assumption about the shape of the hazard function (Allison, 1984; Fricke and Teachman, 1993; Guikey and Rindfuss, 1987). The analysis is based on person-years; women who experience an event (a birth) are censored at that point in time. For the 301 ever-married women there are a total of 804 person-years. Furthermore, the dependent variable is dichotomous, coded 0 if no birth occurred and 1 if a birth occurred in a given year. Therefore, the multivariate models were estimated using logistic regression (Morgan and Teachman, 1988; Hosmer and Lemeshow, 1989).

Table 4 shows the results of the multivariate analyses. For ease of interpretation the log odds are given. These transformed coefficients can be interpreted as the amount by which the odds of experiencing an event (a first birth) are multiplied for each unit change in the explanatory variables (Morgan and Teachman, 1988). A coefficient greater than 1 means that an increase in that covariate is associated with a greater likelihood of having a first birth, i.e., a positive effect. A coefficient less than 1 indicates a decrease in the probability of having a first birth as that covariate increases, i.e., a negative effect. A coefficient of 1 implies no effect.

The relationship between one variable and the odds of a first birth controlling for time and time squared are displayed in the first column of Table 4. Model 1 contains background variables only. Model 2 shows the relationship between risk of a first birth and marriage characteristics. Model 3, the final model, controls for both background and marriage characteristics.

Table 4 Odds ratio (OR) of giving birth in years since marriage for all ever married women, Kirtipur, 1993

Variable	Zero Order*		Model 1		Model 2		Model 3	
	OR	P	OR	P	OR	p	OR	p
Marriage cohort								
1970-1979	1.36	(.123)	1.23	(.315)	1.31	(.185)	1.22	(.359)
>1979	2.16	(.000)	1.79	(.008)	1.93	(.001)	1.66	(.026)
Father's work experience before respondent's marriage	1.45	(.043)	1.33	(.128)			1.30	(.169)
Wage labor								
Respondent's outside exposure before marriage								
Lived outside	2.09	(.001)	1.73	(.023)			1.70	(.031)
Respondent's literacy								
Can read and write	1.78	(.003)	1.18	(.471)			1.15	(.558)
Respondent's first age at marriage								
>19	1.57	(.004)			1.39	(.050)	1.34	(.081)
Choice of spouse								
Respondent's chicce	1.38	(.066)			1.23	(.283)	1.14	(.505)
Exchange of gifts								
Gifts exchanged	1.26	(.213)			1.19	(.386)	1.18	(.416)
Time x gifts	1.14	(.085)			1.18	(.042)	1.19	(.035)
Time			1.10	(.365)	1.01	(.917)	1.03	(.807)
Time squared			1.03	(.011)	1.04	(.010)	1.04	(.008)
Model X^2			70.70		70.74		78.30	

*Controlling for time and time squared.
Note: Total number of cases = 804. Blank cell indicates variable not included.

The zero order correlations show significant associations with marriage cohort, father's work experience, respondent's outside exposure before marriage, respondent's literacy and respondent's age at marriage. Women who married after 1979 have a significantly higher risk of having a first birth than those who married before 1970; they are 116 percent more likely to experience a first birth in any given interval, according to the zero order effects. The cohort who married in the 1970s does not differ significantly from earlier cohorts as far as the likelihood of having a first birth is concerned, though the effects are positive. These effects of marrying in a later cohort remain significant but decrease in strength as additional variables are added to the models. This suggests these variables may exert influence on the marriage process itself, in addition to influencing the risk of having a first birth.

Daughters whose fathers worked as wage laborers are 45 percent more likely than those whose fathers performed other work to have a first birth in any given interval, according to the zero order

effects. This variable retains its positive effect but loses its significance as other variables are added to the models. Women who lived outside their natal home before marriage are 109 percent more likely than those who did not to have their first birth in any given year. This effect remains significant across models.

Respondent's literacy also exerts a strong and significant effect on the likelihood of having a first birth. Yet, this effect diminishes as other variables are added to the model, thereby suggesting that women's literacy may be related to other variables in the model. Women who marry at age 19 and above have a 57 percent higher risk of having a first birth than those marrying before the age of 19. Again, this effect weakens slightly in Models 2 and 3. The respondent's own choice of spouse—the women's autonomy variable—is positive but not significant in any of the models, suggesting that women who choose their own spouse may be more likely to experience a first birth.

Finally, whether or not gifts were exchanged during the marriage process has been added into the equation with an interaction term (gift x time) to assess the possible changing effects of this variable over time. These effects are positive meaning that women in marriages in which gifts are exchanged are more likely to experience an early first birth; this effect strengthens over time.

Conclusion

Based upon theoretical and empirical studies, I have argued that social transformation which encourages quicker intimacy between spouses is an important factor in the explanation of temporal changes in the interval between marriage and first birth. The cohort analyses of the first birth interval revealed that this interval has been declining among the Newar women of Kirtipur.

The results show significant effects of birth cohort, respondent's outside exposure before marriage and the interaction term, gift x time. Women who have married recently and who have lived outside the village before marriage are more likely than others to have a first birth in any given interval. Marriages in which gifts are exchanged also increase the probability of having a first birth quickly; these situations may provide the new bride with a sense of security which facilitates the building of intimacy.

The effects of other variables, while not significant, are in the expected directions. This suggests that women's literacy, an increased age of marriage and having one's own choice of spouse may encourage

the establishment of intimacy between a husband and wife and, therefore, lead to a shortening of the first birth interval. Women who have more autonomy have shorter first birth intervals than others. Further study is needed to determine how the timing and spacing of births impacts upon Nepal's fertility transition.

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Acknowledgements

Financial support for data collection and primary-level analysis were provided by the Rockefeller Foundation. Support for the preparation of this paper was provided by Family Health International. The author wishes to thank Tom Fricke for his valuable suggestions and helpful comments on earlier drafts of this paper.