CHANGES IN MARRIAGE AGE AND FIRST BIRTH INTERVAL IN HUANING COUNTY, YUNNAN PROVINCE, PR CHINA

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Abstract. The timing of marriages, first birth interval and the prevalence of premarital conception (PMC) among women of successive birth cohorts in one rural county in Yunnan, China, were examined. Detailed pregnancy histories were collected for 1,336 women aged 15 - 64 years using a Life History Calendar. The rising marriage age and shorter first birth interval correspond to over-all changes in the Chinese society over the same time period. The mean age at first marriage for women born before 1950 was just below 20, and 22.5 among women born 1976-1980. The later marriage age was partly offset by the dramatic shortening of the first birth interval from over 30 months in the oldest cohort to 11-12 months in the youngest. One explanation of the shortening of the first birth interval may be the increase in premarital conception. Among the young women in our study almost one-third of first pregnancies were conceived before marriage.

INTRODUCTION

Women's ages at first marriage and at first childbirth are important proximate determinants of fertility (Bongaarts, 1982; Bongaarts and Greenhalgh, 1985). The later the age is at first marriage and/or the longer the interval is between marriage and first birth, the slower is the rate of population growth. There has been a dramatic fertility decline in Southern and Southeastern Asia in recent decades partly due to women postponing marriage and the birth of the first child (Prachuabmoh, 2002). These variables are also interesting as indicators of women's status and evolving gender roles. A couple who intend to have one or two children may want to lengthen the spacing between marriage and first birth in order to better establish their life as a couple, and this would give more time for training and work experience before the first child arrives (Martin, 1995). Thus, the lengthening of the interval between marriage and first birth may be an important goal of the state, but also may be in the interest of individual couples (Zheng, 2000).

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Since the founding of the People's Republic of China in 1949, delayed marriage has been encouraged for demographic reasons, as a way to reduce fertility, as well as a means to liberate women from family bondage (Banister, 1984). One of the first policy measures of the new government was the Marriage Law of 1950 that set the minimum legal age for marriage at 18 for women and 20 for men, respectively. Arranged marriages were prohibited and both parties had to give their consent to marry. Marriage was to be based on love and mutual consent (Li, 2000). In the early 1970s, the first nationwide family planning program was launched, the *wan xi shao* campaign, that stressed later marriage (*wan*), longer intervals between births (*xi*), and fewer children (*shao*) (Banister, 1984). The minimum age for marriage was then set at 23 for women and 25 for men in rural areas, and 25 and 28 in urban areas, respectively. Most couples had their first child soon after marriage, and they were encouraged to wait for up to three or four years before a second birth. In 1979 the one-child policy was introduced, and one year later a new Marriage Law was adopted (Tian, 1991). In this new law, delayed marriage and delayed childbirth were still emphasized, but the high minimum legal marriage age from the *wan xi shao* campaign was lowered to 20 for women and to

22 for men, respectively.

The traditional Chinese marriage pattern can be generalized as early and universal (Croll, 1981; Zheng, 2000). Marriages were the means for forming families, giving birth to children, and for the continuation of family lines (Zheng, 2000). Chinese couples sought to have children as soon as possible after marriage (Zhang, 1999). Most rural communities still follow the tradition of universal marriage and childbearing, but there have been significant variations in the mean age at first marriage and the length of the first birth interval over the past fifty years. The information available on marriage ages for women (Feeney and Wang, 1993) showed an increase from a mean of 18 years in 1950, to a mean of 23 in 1979. After the new Marriage Law of 1980, the mean marriage age declined to approximately 21.5. According to the 1990 census (Zhang, 2000), in rural areas around 94% of women below 25 years were married; by 29 years of age, 99% were married. In year 2000, the mean age at first marriage for females was 22.6 (Lutz *et al*, 2005). The mean interval between marriage and the couple's first birth (first birth interval) shortened considerably, from 34 months in the 1950s to less than 15 months in the 1980s (Coale *et al*, 1988). Thus, although the mean age at first marriage for women had gone up by over three years since the 1950s, the transition from marriage to parenthood had shortened by an average of one and a half years during the same period (Wang and Yang, 1996).

Premarital sexual relations have traditionally been strictly prohibited in China and are still socially condemned, especially in rural areas. But one recent study (Hong, 2002) from the three provinces of Guangdong, Shaanxi, and Shandong reported an increase in pre-marital conception (PMC) from 3% among women married before 1971 to about 12% among those married in the late 1980s. Similar trends have also been observed in other parts of China and elsewhere in the region (Rindfuss and Morgan, 1996; Wang and Yang, 1996; Wang, 1997). These trends have been explained as a result of more intimacy and sexual activity of couples, especially before marriage, as 'love marriages' have been replacing the traditional arranged marriage (Thornton and Lin, 1994; Rindfuss and Morgan, 1996). Some authors interpret the increase in premarital conception as a change in the power balance between generations and between genders, in favor of the younger generations and of women (Wang and Yang, 1996; Hong, 2002).

The aims of this study were to compare the timings of marriages, first birth interval, and the prevalence of premarital conception among women of different birth cohorts in one rural county in Yunnan Province, Southwest China and to analyze these events in relation to women's socio-demographic variables. The period of study included women born from before the revolution in 1949 to those women born at the time of economic reforms and the return to family farming in the 1980s. We discussed the demographic variables in the context of the socio-economic and policy changes, and reflected on what they may suggest about changing sexual behaviors and gender roles in rural Yunnan.

MATERIALS AND METHODS

The study was conducted in Huaning County, Yunnan Province in Southwest China. Yunnan is one of the poorest provinces in China and has a total population of approximately 38 million. Huaning County was selected as the study site based on the willingness of local authorities to cooperate. The county is located in the Southeast part of Yunnan and has a population of about 200,000, of which 90% live in rural areas. National minorities constitute 16%. The study population were women aged from 15 to 64 years old at the time of the survey in 2000. Thus, the older women in the study population entered reproductive age at the time of the foundation of the People's Republic of China in 1949.

In Rural China, each county is divided into townships, and each township into administrative villages. These administrative villages, in turn, consist of a number of 'natural villages' that are composed of 'clusters' of houses located in close proximity. Based on lists provided by local authorities, a multistage cluster sampling technique was used to randomly select three out of the five townships, and ten out of 48 adminis-

trative villages. From each of these selected administrative villages, half of all 'natural villages' were selected. In each 'natural village' all households were visited, which altogether included around 2,000 eligible women. Of these, 1,503 were at home, although about 500 (25%) were not at home at the time of our visit. Due to a shortage of funds to extend the field study, we unfortunately were not able to revisit these families. All women who were at home at the time of the first visit, after they were informed of the purpose of the study and that they were free to decline, agreed to participate. Female health workers from the area, who had extensive experience from previous surveys, conducted the interviews in each woman's home. The interview transcripts were reviewed each day by the research supervisors and checked for internal consistency. After cleaning the data sets, and checking for missing values and internal inconsistencies, 1,336 were retained out of the original 1,503 cases.

We used pre-coded questionnaires that included details on marriages, births, abortions, contraceptive use, and the woman's education, occupation and husband's age. (For this article, the events of interest are first marriage and the timing of the first birth.) Since we were interested in the changes that had occurred over time, we decided to use the Life History Calendar (LHC). Survey research has shown (Caspi *et al*, 1996) that through careful questionnaire construction it may be possible to obtain reliable retrospective reports of life-course dynamics. The LHC method builds in these advances on survey methodology. It is a method that is often used when there is a requirement for highly accurate and detailed information on the timing and sequencing of personal events in the lives of individuals and age groups (Freedman *et al*, 1988; Caspi *et al*, 1996; Axinn *et al*, 1999). It is especially useful method in providing information on events such as first marriage and first birth, which are important 'landmarks' in the lives of women (Furstenberg *et al*, 1987; Lillard and White, 1995; Thornton *et al*, 1995; Belli, 1998). The LHC is a large grid used to record the events in a respondent's life. By helping the respondent to relate, both visually and mentally, to the timing of several kinds of events, those events are more readily remembered and provide important reference points for recalling less salient events. Reference was made to the Chinese lunar calendar.

Women were grouped in 5-year birth cohorts, starting with those born during 1936-1940, and ending with women born during 1976-1980. The two oldest cohorts, those of 1936-1940 and 1941-1945, had small numbers and therefore were collapsed into one. The study variables were compared between the different birth cohorts. This approach would consider the events that occur at approximately the same time in the life course of a woman, and thus would make it possible to interpret cohort differences as reflecting historical changes across time.

Premarital conception was defined as giving birth within the first 8 months after the first marriage or having experienced abortion before marriage. Consequently, *marital conception* was defined as having the first birth after 8 months following the first marriage. These definitions are somewhat arbitrary as birth resulting from conception within an 8-month period after marriage (premature birth) is possible. The reason for choosing these definitions was to be consistent with definitions used in earlier research (Wang and Yang, 1996; Rindfuss and Morgan, 1996). The *time to first marriage* was defined as the number of months between the age of 15 years, and the date of the first marriage or the date of the survey (whichever came first). The *time to first birth* was defined as the number of months between the date of the first marriage, and the date of the first birth or the date of the survey (whichever came first).

The socio-economic variables were *ethnicity*, which was classified as "Han," "Yi," or "all others"; *educational level*, which was classified as "no formal education," "1-6 years of education (compulsory)," or "6+ years"; *occupation*, which was classified as "farming" or "non-farming"; and *religion*, which was classified as "no religion," "Buddhism," or "other religion." The demographic control variables were *birth cohort* and *age-disparity between spouses*, which was classified as "wife older than husband," "same age and/or husband 1 year older," "husband 2-

4 years older," and "husband 5 years older or more." *Introduction to husband* was classified as "self," "parents/friends and/or relatives," and "matchmaker." We included these independent marriage-related variables in the analysis, despite the fact that the dependent variable was "conception before marriage," as there was an assumption that the prospective groom would have most likely been the one who produced the premarital pregnancy.

Couples where the woman was younger than the male partner were expected to have a lower prevalence of premarital conception as they would more likely be influenced by "traditional" values. For the same reason, we expected that those women, who were introduced to their husbands by a matchmaker rather than by self, would have a lower prevalence of premarital conception. In the analysis of first birth interval, the same independent variables outlined above were used together with age at first marriage. Women who had never experienced the event of interest (marriage and/or first birth) were treated as censored at the survey time. Their contribution to the total exposure time was computed as the difference in months between the beginning of respective intervals (age 15 and date of marriage, respectively) and the survey time.

Logistic regression (Hosmer and Lemeshow, 1989) was used to model the conditional probability that a married woman had had a premarital conception. Maximum likelihood methods were used to estimate the effects of social and demographic factors on the log-odds that a married woman, with a given characteristic, has had premarital conception. Logistic regression was the natural choice because we had a binary (dichotomous) outcome variable of whether or not a married woman had had premarital conception. On the other hand, the rate at which married women have their first birth was modeled using proportional hazard model (Cox, 1972). Effects of social and demographic factors on the log-intensities of first birth were estimated by partial likelihood method (Cox, 1975). The choice of such a model and method were dictated by the nature of the data (non-negative time variable and the presence of censored observations).

RESULTS

Socio-demographic profile of the women

Education levels were higher among women born during the 1960s and after. In the two youngest cohorts only 1 to 2% were illiterate, whereas in the two oldest cohorts 65% and 42% were illiterate, respectively. Farming was the predominant occupation among over 90% of all cohorts. In the younger cohorts around 5% of the women were employed in non-agricultural work, such as cadre, teaching, and health care. Around 90% of all the women were of Han ethnicity, and 7% were of Yi ethnicity. In the two oldest cohorts about 30% identified themselves as religious, mainly Buddhists, whereas in the younger cohorts less than 4% did so.

Proportion of women married by age (in years) across birth cohorts

The cumulative proportion of women married by age (single years) across the various birth cohorts is shown in Fig 1. The proportion of very young wives decline as we move from older to younger women. For the two oldest birth cohorts, 45 to 50% had married before the age of eighteen, and 80% were married before the age of twenty. The women born from 1951 to 1955, having entered marriage age during the *wan, xi, shao* campaign in the 1970s, show a somewhat different marriage pattern: only 60% had married before the age of twenty, and 75% did so before the age of twenty-two. In the younger birth cohorts only 10% had had very early marriages, and only about 30% had married by twenty years of age. A common characteristic of all birth cohorts was that, within each respective cohort, the members of that group married within a short time span. The older age cohorts started to get married around sixteen, and by the age of twenty 80-90% was married. Few of the younger women were married before twenty, but by twenty-four the proportion married was also approximately 80-90%.

Mean age at first marriage and first birth

Mean age at first marriage of women born between before 1950 was just below twenty. For the next three birth cohorts, marriage age increased gradually to reach twenty-two years for women born between 1961-1965. This upward

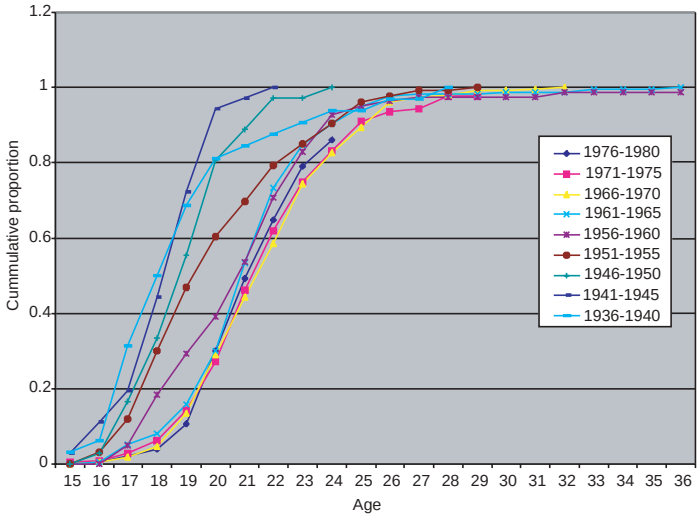

Fig 1-Cumulative proportion marrying by age across birth cohort.

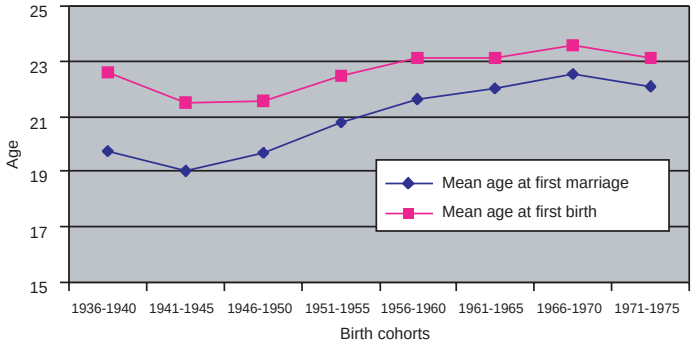

Fig 2-Mean age at first marriage and first birth across birth cohort.

trend leveled off for the younger cohorts at just over twenty-two years (Fig 2). Buddhist women and women with no education married earlier, as compared to women with no religion and those with some education. Women born between 1956 and 1975 married significantly later than older women did. The older the husband, relative to the wife, the lower was the woman's age at first marriage. All of these differences are statistically significant ($p<0.01$). There were no significant differences in women's age at first marriage between different ethnic and occupational groups. Fig 2 also describes the gradual shortening of first birth interval over the birth cohorts, from a mean interval of 34 months for the oldest birth cohorts, to around 12 months for the youngest cohort.

The effects of socio-demographic variables on the rate of first birth are shown in Table 1. Model 1indicates that there was no significant effect of ethnicity on the rate of first birth when ethnicity was entered alone in the model. In Models 2 to 7, other demographic and socio-economic variables were added. Age at first marriage, birth cohort, and age disparity between spouses had a persistent and significant effect on the rate of first birth, *ie*, the younger cohorts, women who married later, and women who were older than their husbands at marriage had shorter birth intervals.

Trends in premarital conception (PMC)

The total number of first pregnancies was 1,025. Of these, about one-fifth were conceived before marriage. Table 2 shows that there are differences in the prevalence of PMC among groups by ethnicity, by religion, and by education. Younger women generally also had a higher prevalence of premarital conception. Whereas the older cohorts, women born before 1960, had a prevalence of PMC that ranged from 9 to 16%, the corresponding figure for women born after 1960 was 20 to 30%. Age difference between spouses was not associated with the rate of PMC. In the multivariate logistic regression analysis, the effects of socio-demographic variables on premarital conception were insignificant except for religion and birth cohort, *ie*, younger women and non-religious women had higher rates of PMC.

DISCUSSION

We analyzed the reproductive histories of 1,336 rural women in Huaning, a poor rural county in Yunnan. The fact that 25% of the women were not at home at the time of the first visit, together with the lack of resources to make

Table 1
Estimates of effects on log-hazard of first birth interval: results from Nested Hazard (Cox) models.

Covariate	Labels	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Ethnicity	1. Han	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2. Yi	0.122	0.129	0.136	0.129	0.097	0.116	0.118	0.102
	3. All others	-0.010	0.033	0.038	0.035	0.023	-0.067	-0.122	-0.144
Religion	1. No religion	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2. Buddhism	-	-0.390	-0.264[a]	-0.266[a]	-0.147	0.015	0.000	-0.004
	3. Other relig	-	-0.060[b]	0.031	0.097	0.129	0.133	0.128	-0.155
	(Incl don't know)	-							
Education	1. None	-	-	0.000	0.000	0.000	0.000	0.000	0.000
	2. Comp or less	-	-	0.321[b]	0.311[b]	0.185	-0.051	-0.015	-0.015
	3. Above comp	-	-	0.33	0.317	0.132	-0.107	-0.089	-0.108
Occupation	1. Farming	-	-	-	0.000	0.000	0.000	0.000	0.000
	2. Others (Non farming)	-	-	-	0.020	0.044	0.002	0.012	0.040
Age at marriage	1. < 20	-	-	-	-	0.000	0.000	0.000	0.000
	2. 20-21	-	-	-	-	0.354[b]	0.249[a]	0.300[b]	0.290[b]
	3. 22-23	-	-	-	-	0.558[b]	0.378[b]	0.469[b]	0.461[b]
	4. 24+	-	-	-	-	0.574[b]	0.444[b]	0.579[b]	0.577[b]
Birth cohort	1. 1936-1945	-	-	-	-	-	0.000	0.000	0.000
	2. 1946-1950	-	-	-	-	-	0.276	0.227	0.235
	3. 1951-1955	-	-	-	-	-	0.333[a]	0.289	0.290
	4. 1956-1960	-	-	-	-	-	0.522[b]	0.441[a]	0.425[a]
	5. 1961-1965	-	-	-	-	-	0.734[b]	0.698[b]	0.676[b]
	6. 1966-1970	-	-	-	-	-	0.820[b]	0.791[b]	0.766[b]
	7. 1971-1975	-	-	-	-	-	0.708[b]	0.674[b]	0.618[b]
	8. 1976-1980	-	-	-	-		0.937[b]	0.877[b]	0.816[b]
Age difference between spouses	1. Wife Older	-	-	-	-	-	-	0.000	0.000
	2. Same/husb 1y	-	-	-	-	-	-	0.225	0.232
	3. Husb 2-4 y	-	-	-	-	-	-	0.235	0.258[a]
	4. Husb 5+ y	-	-	-	-	-	-	0.420[b]	0.432[b]
Introd to husband	1. Self	-	-	-	-	-	-	-	0.000
	2. Parents, friends and/or relatives	-	-	-	-	-	-	-	-0.126
	3. Matchmaker	-	-	-	-	-	-	-	-0.116

[a]$0.01 < p \leq 0.05$; [b]$p < 0.01$

a follow-up visit, were weaknesses. The resulting possible selection bias was considered, *ie*, that the absent women differed from the respondents in some way. For example, one might suspect that those absent were city migrants and were younger than those who remained at home. Two facts seem to argue against this: first, in households visited during the evenings, all the women were at home. This suggests that those absent in the daytime were simply out working at our visit. Second, to see if our sample differed from the female population in Huaning as a whole, we were able to compare our sample with the census data from Huaning County for the same year, 2000. In our sample, there were somewhat more women in the younger age groups and less in the older age groups as compared with the national survey (Fig 3). This suggests that our sample was not biased by out-migration of young women, as it was mostly

Table 2
Percent premarital conceptions (PMC) by socio-demographic characteristics.

Independent variable	Total no. of 1st pregnancies N=1,025	Total no. of PMC N=200	Percent of PMC	Missing cases
Ethnicity				0
1. Han	931	180	19.3	
2. Yi	67	18	27	
3. All others	27	2	7	
Religion				0
1. No religion	916	179	19.5	
2. Buddhism	71	10	14.1	
3. Other religions	38	11	29	
Education				0
1. None	147	18	12.2	
2.1-6 yrs	847	176	20.7	
3. 6 + yrs	31	6	19.3	
Occupation				4
1. Farming	987	193	19.6	
2. Others	34	7	20.6	
Birth cohort				0
1. 1936-1940	31	7	22.6	
2. 1941-1945	35	3	8.6	
3. 1946-1950	67	8	11.9	
4. 1951-1955	121	19	15.7	
5. 1956-1960	73	7	9.6	
6. 1961-1965	169	35	20.7	
7. 1966-1970	227	50	22	
8. 1971-1975	205	41	20	
9. 1976-1980	96	30	31.2	
Age difference between spouses				24
1. W older than H	99	19	19.2	
2. W and H same or H one year older	231	45	19.5	
3. H 2-4 years older	417	81	19.4	
4. H 5+ years older	254	52	20.5	
Introduced to husband by whom				0
1. Self	435	97	22.3	
2. Parents, relatives and/or friends	184	34	18.5	
3. Matchmaker	400	65	16.3	

young women who migrate.

Another methodological problem was that of recall, which is an inevitable risk in retrospective demographic surveys. The Life History Calendar (LHC) that we used has been developed to minimize this risk. Using the LHC, we observed that the visual display of the calendar helped both the respondent and the interviewer to gather data with precision, in terms of both sequencing and timing. It was especially helpful for the older women. It also helped the interviewer to crosscheck and correct inconsistencies in the timing of different events, and to be sure that they have collected complete data. Thus, accepting reservations about the validity of retrospective data, we trust that our data reflect with reasonable accuracy the reproductive patterns and trends of the women in the sample.

Our findings reflect well-known changes in reproductive patterns and highlight interesting

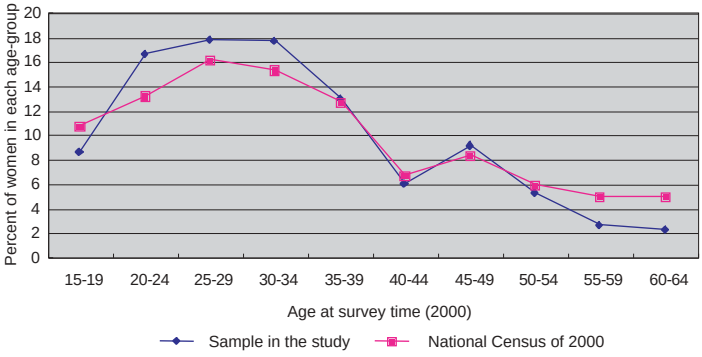

Fig 3-Age-distributions of women aged 15-64 in the sample and in Huaning County, based on China's fifth national census in the year 2000.

new trends among the younger birth cohorts. The rising marriage age and shorter first birth interval correspond to over-all changes in the Chinese society over the same time period. It would be premature to conclude whether the lower prevalence of marriage among the younger women represents another upward shift in age at marriage, or an increase in the number who never marry. However, considering the age at marriage of the women born during 1971-1975, almost all had married by the age of 29, it seems plausible that this trend suggests an upward shift in age at marriage and continued universal marriage. The timing and magnitude of the increase in marriage age during the 1970s, both at national levels and in our study, suggest that these were partly a result of policy restrictions on early marriage (Feeney and Wang, 1993).

The problem of assessing the contribution of policy to the changes in marriage age is complicated by the interactions among socio-economic and cultural factors. In our study, the more educated and non-religious women married later and, interestingly, women older than their husbands had the highest mean age at first marriage. These women, and the other women who married later, also had the shortest birth interval. This is not surprising in a culture where marriage after the age of twenty-three is considered a 'late marriage,' and older women may be under even stronger pressure from the families than younger women to prove their fertility.

One of the most salient findings of our study was the shortening of first birth interval over time. Although the older birth cohorts waited on an average of 30 to 34 months after marriage for their first child, for the younger cohorts the first birth interval was only 12 months. To understand the shortening of first birth interval we must ask why the interval was so long among the older women–almost three years. This finding has in fact been documented for all of China before the 1970s. National data shows (Coale *et al*, 1988) that the mean first birth interval dropped from 34 months in the 1950s, to 26.4 months in 1967, and to 14.4 months in 1987. A reason may partially be found in the political history of China: the Great Leap Forward starting in 1958. For a period of three years, economic planning collapsed. Three years of poor agricultural yields followed, and starvation became widespread. At the national level, fertility fell drastically during these years (Tian, 1991). In 1958, the total fertility rate (TFR) was 5.7,and in 1961, it had fallen to 3.3. After recovery from the famine, a baby boom followed with a fertility peak in 1963 of 7.5 births per woman. Thus, the long first birth interval for the older women in our study may be due to postponement of births during the years of the Great Leap Forward. The relatively low fertility in the early years of marriage among the women who grew up under the old regime has also been interpreted as a consequence of obeying traditional restraints on coital frequency (Feeney and Wang, 1993; Wang and Yang, 1996).

An additional explanation to the shortening of first birth interval may be the sharp increase in premarital conception. Among the young women in our study, almost one-third of first pregnancies were conceived before marriage, a rate that is considerably higher than what has been found in other studies of this phenomenon in rural China. Several authors have described the 'silent sexual revolution' in urban China and elsewhere in the region (Chang, 1994; Wang and

Yang, 1996; Rindfuss and Morgan, 1996; Wang, 1997; Hong, 2002). For example, in a survey in Taiwan, 8% of the women born in the late 1930s and 40% of women born during 1960-1964 reported that they were pregnant at the time of their wedding (Thornton *et al*, 1994). The literature on premarital conception in rural China is more limited, but they consistently show an increasing trend (Wang and Yang, 1996; Hong, 2002).

Wang and Yang (1996) suggest that the increase in premarital conceptions reflects the shift from arranged marriages to 'love marriages' and a change of generational power balance in favor of the young. They also argue that this increase reflects a shift in the gender-power balance in favor of the women. In our study, we could not find any support for this argument. The non-religious women had higher rates of PMC compared to the religious ones. This suggests that the religious women were more influenced by 'traditional' values, but neither marriage arrangement nor age difference between spouses were associated with increasing premarital conception. We have no qualitative information on sexual behavior and changing gender relations from our study population. However, Huaning is a poor county with limited industrialization. It continues to be a male-dominated society with a strong preference for sons, as evidenced by high sex ratios at birth (Löfstedt *et al*, 2003). The women in our study were living primarily a traditional agrarian life, with few opportunities for higher education or employment outside family farming. Therefore, even if there had been a shift towards more liberal attitudes to sexual behavior in many parts of China (Rindfuss and Morgan, 1996; Wang and Yang, 1996), this does not necessarily imply greater gender equality, especially in rural areas. Therefore, until we have more information, there should be some caution exercised when interpreting the increase in premarital conceptions to be a shift in gender-power balance in favor of women.

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