


# Male Experience and Sociodemographic Characteristics of Premarital Pregnancy: Based on a Nationwide Population-Based Survey Among Urban and Rural Chinese Youths

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## Abstract

Little is known about the male experience of premarital pregnancy (MEPP) and the sociodemographic characteristics of unmarried male youths involved in pregnancy. This study estimates the prevalence of MEPP and identifies the sociodemographic factors associated with it among Chinese unmarried youths aged 15–24 years, using data from the Survey of Youth Access to Reproductive Health in China. Descriptive analyses and  $\chi^2$  tests were applied to explore the number and prevalence of MEPP, and logistic regressions were used to identify the associated factors. As a result, among 2,853 sexually experienced male youths, 597 individuals reported 852 partner pregnancies caused by them during their lifetime, with a weighted prevalence rate of 20.87% (95% CI [18.85%, 22.88%]). Among these pregnancies, 78.05% ended in induced abortion. Factors like living with only the father (OR: 4.16, 95% CI [2.22, 7.8]) and the low level of education of the father (junior high school or below, OR: 1.60, 95% CI [1.04, 2.46]) were associated with MEPP among unmarried male youth. Furthermore, there is a marked difference between the rural and urban youth in factors associated with MEPP. The findings in this study highlight the importance of and need for strategies and interventions targeting male youths, in order to improve sexual education and reproductive services.

## Keywords

pregnancy, male youth, sociodemographic characteristics, China

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Early pregnancy among unmarried adolescents and youths constitutes an important public health challenge in developed and developing countries. According to the World Health Organization statistics in 2016, more than 20 million teenage girls aged 15–19 years become pregnant in developing countries, about half of these pregnancies being unintended (World Health Organization, 2017), putting them at risk of unsafe abortions and dangerous child-birth (United Nations Population Fund [UNFPA], 2015).

Child marriage is considered a main contributing factor to early pregnancy, and various sociodemographic factors are associated with adolescent pregnancy. Evidences from developing countries indicate that young women with low educational attainment, in deprived areas of residence, having lower family income, and from

single-parent families are at a higher risk of an unintended pregnancy (Calvert et al., 2013; Coelho et al., 2012; Hall et al., 2016). Studies in developed countries indicate that having an employed mother and female friends with health risk habits are also risk factors for adolescent pregnancy (Vázqueznavá et al., 2014).

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Females in isolation rarely make decisions and engage in behaviors that may cause pregnancy. Previous studies reported that males' intentions and behaviors will have a direct influence on their female partners' decisions, such as whether to have sexual intercourse or whether to use contraceptive methods, and what type thereof (Guzzo & Furstenberg, 2007; Sassler, Miller, & Favinger, 2009). Globally, however, little is known about the experience of male youths in relation to their partners' pregnancies, leaving critical questions concerning the male partners' perspectives unanswered (Lindberg & Kost, 2014). A previous study in France suggested that 5% of sexually active men reported that they had experienced an unintended pregnancy with a partner in the past 5 years, and the recent experience of an unintended pregnancy was related to sociodemographic factors such as their age, the mother's education, and their relationship situation at the time of the survey (Kågesten, Bajos, Bohet, & Moreau, 2015).

In China, although child marriage is not very common, adolescent or youth pregnancy is still an important issue, especially when it comes to pregnancy outside of marriage. Actually, given that childbirth outside of marriage is against the Family Planning Law of China and that transgressors will be imposed a fine, most premarital pregnancies end in abortion (Hemminki, Wu, Cao, & Viisainen, 2005). In fact, unmarried Chinese youths could be more at a disadvantage on abortion matters as compared to the married population in China and their counterparts in some other countries. As the most populous country, China has more than 175 million youths aged 15–24 years. Among the sexually active female youths, more than one fifth have at least one premarital pregnancy, resulting in 2–3 million abortions (Zheng et al., 2010). Indeed, premarital pregnancy may radically change a girl's present and future and impose psychological strains on her male partner as well; it gives rise to undesirable social outcomes for young females and males involved, such as deprivation of education, stigma, poverty, and social exclusion (Goossens, Kadji, & Delvenne, 2015; UNFPA, 2015).

However, related reports on Chinese males are limited, with only a local study with small samples ( $N = 502$ ) suggesting that 17.7% of sexually active males have been involved in an unintended pregnancy in Shanghai, a metropolis of China (He & Blum, 2013). With a priori knowledge that there are obvious reproductive health resource and service disparities between rural areas and urban areas in China (Jing, 2004), the results in Shanghai cannot accurately showcase the male experience among rural population. The experience of male youths in regard to premarital pregnancies and the factors associated with these events need to be explored to capture a comprehensive understanding of their sexual and reproductive health

trajectories for gender-inclusive family planning. This study aims to estimate the prevalence of male experience of premarital pregnancy (MEPP), identify the sociodemographic factors associated with MEPP, and explore the difference between rural and urban youth in the factors associated with MEPP among Chinese unmarried male youths aged 15–24 years, using nationwide representative data.

## Method

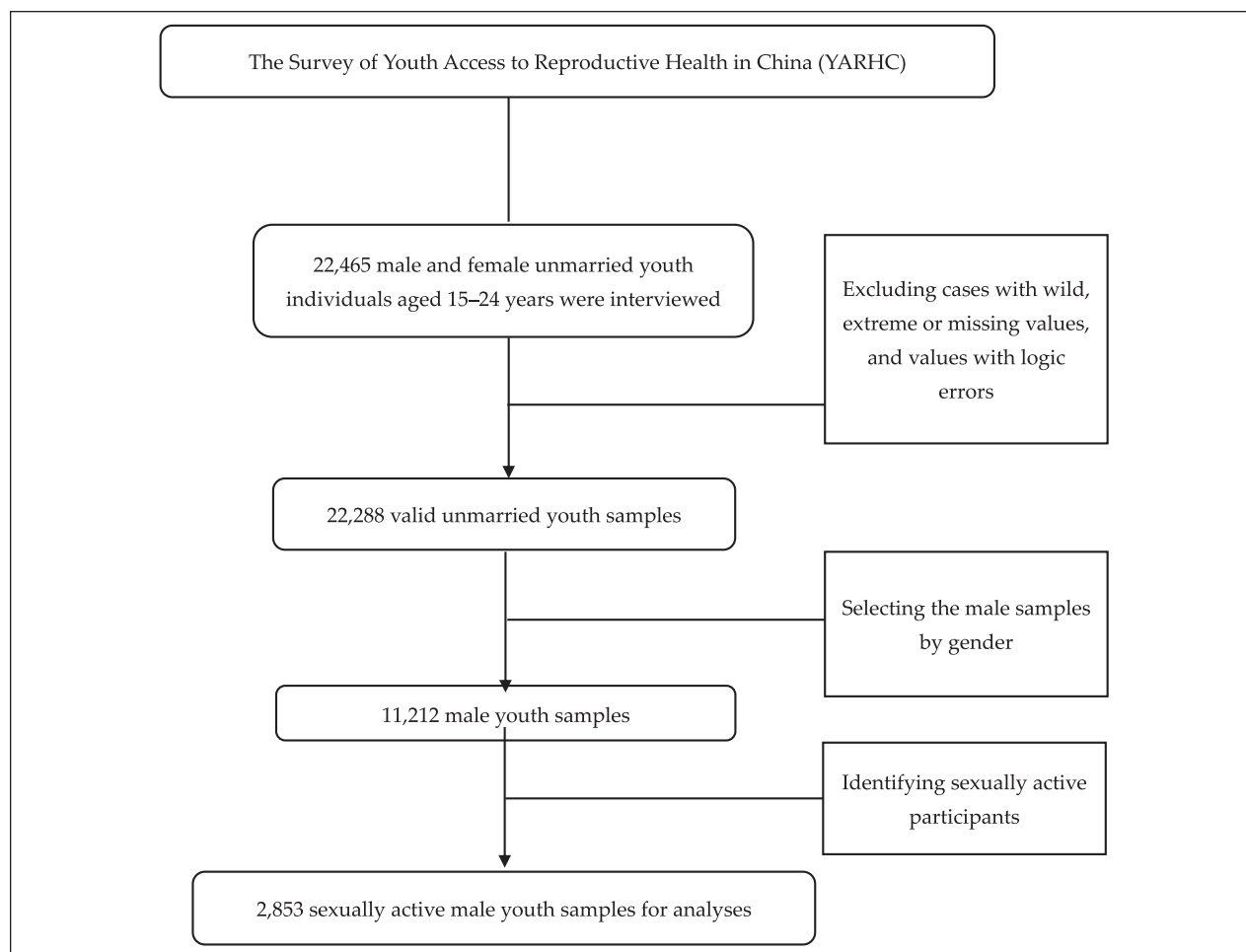
### *Data Source and Ethical Approval*

Data were drawn from the Survey of Youth Access to Reproductive Health in China (YARHC), a population-based survey aiming to describe the knowledge, attitude, and behavior of sexual and reproductive health among Chinese unmarried youth and to explore the accessibility to reproductive health services for youth, conducted by Peking University in 2009. Experts from related academic areas in China and UNFPA designed the study protocol and questionnaire of YARHC. The study was approved by the institutional review board of Peking University Health Science Centre (no. 20090928). All respondents gave their written consent to participate in the survey and for those under 18 years, the consent form was signed by their adult guardians.

### *Participants and Samples*

The target population was Chinese unmarried youths aged 15–24 years, living in Mainland China. Youths living in Tibet, Hong Kong, Macao, and Taiwan were excluded due to geographic, political, economic, and cultural reasons. In order to cover youths living in different environments, the interviews were conducted in schools, households, and factories, so as to include youths at schools (either living on campus or in a community), in households (living with family, either employed or unemployed), and in collective households (employed, living in a communal house).

A four-stage stratified random cluster sampling with probability proportional to size was used in the YARHC survey. The four stages for school youths were cities-schools-classes-students; for household youths were cities-counties-communities-household youths; for collective household youths were cities-counties-map pieces-collective household youths, and map pieces were divided according to streets, rivers, and so on in the map. The final estimated sample size was 22,535, distributed in 40 cities and counties from 25 provinces/autonomous regions/municipalities in China, with a sampling ratio of 11.4 per 100,000. Given the refusal rate of 24.9%, when respondents could not be contacted or there was no



**Figure 1.** Flowchart of the study samples.

targeted subject in the household, interviewers followed a samples substitution principle, in which the neighbors of nonrespondents would be taken as the replacement with a swing priority from right to left within five units. Finally, 22,465 questionnaires in paper–pencil version were collected from male and female respondents, among which 22,288 were valid after excluding cases with wild, extreme, or missing values and values with logical errors, thereby achieving a validity rate of 98.9%. In this study, female respondents ( $N = 11,076$ ) were excluded; among male respondents ( $N = 11,212$ ), only those who had had sexual intercourse were considered. The samples for analysis were restricted to 2,853 sexually active male youths. A flowchart of the study samples selection is presented in Figure 1.

### Interview Procedure

Using the standard set by the survey expert committee, 579 interviewers received professional training. A pilot study with preliminary interviews was conducted in May

2009, and the formal survey was conducted between October 20 and November 30 of the same year. To protect the privacy of the youths, independent environments and anonymity were ensured, with all respondents being interviewed face-to-face without a third party present. Self-administration was applied for sensitive questions related to sexual experience and behaviors. All questionnaires were collected in ballot boxes after being completed. Additionally, sex separation was respected in the process, with youths being interviewed by interviewers of the same sex.

### Measures

The question “Have you ever had penile-vaginal intercourse?” was employed to determine whether a respondent was sexually active. For sexually active male youths, the answers to the question “Have you experienced any pregnancy with your sexual partner? If yes, how many pregnancies?” were drawn to determine the variable of the MEPP (0 as *no*,  $\geq 1$  as *yes*). In addition, the outcome

**Table 1.** Sociodemographic Characteristics of the Sexually Active Male Youth, by Residence.

Characteristics	Weighted percentage			<i>p</i>
	Total males (N = 2,853)	By residence		
		Urban males (N = 1,688)	Rural males (N = 1,165)	
Age				.474
15–17 years	22.67	21.37	24.23	
18–24 years	77.33	78.63	75.77	
Level of education				<.001
Junior high school or below	15.69	8.81	23.94	
Senior high school	51.47	52.95	49.70	
College or above	32.84	38.23	26.36	
Employment status				<.001
Student at school	38.71	45.17	30.95	
Working nonstudent	47.24	44.14	50.95	
Nonstudent not working	14.05	10.69	18.09	
Religion				.083
Buddhism	9.87	8.63	11.35	
Islam	1.50	1.84	1.08	
Christianity	2.04	2.23	1.81	
Others	1.20	1.32	1.05	
None	85.40	85.97	84.71	
Household circumstance				.203
Living with the father and mother	92.19	91.02	93.59	
Living with only the father	3.11	3.58	2.56	
Living with only the mother	1.83	2.27	1.30	
Without parents	2.87	3.14	2.55	
Mother's level of education				<.001
Junior high school or below	64.01	51.02	79.60	
Senior high school	26.69	35.00	16.71	
College or above	9.30	13.98	3.69	
Father's level of education				<.001
Junior high school or below	49.69	36.87	65.07	
Senior high school	35.98	41.14	29.78	
College or above	14.34	21.99	5.15	
Household economic status				<.001
Top	41.48	54.84	25.44	
Medium	32.36	30.85	34.17	
Bottom	26.16	14.31	40.38	

Note. N refers to sample number; percentages are weighted.

of pregnancy was researched through the question “What’s the outcome of the pregnancy that you experienced?” and answers included “abortion,” “miscarriage,” “birth,” “still pregnant,” or “unknown outcomes.”

Age at the time of the survey was categorized into 15–17 years of age (juveniles) and 18–24 years of age (adults), and residence was classified as urban or rural (according to the administrative division of the residence locations where the responders were living at the time of the survey). Youths were also categorized by level of education (junior high school and below, senior high school,

or college and above), employment status (student at school, working nonstudent, or nonstudent not working), and religion (Buddhism, Islam, Christianity, other, or no religion, based on the responses to the question “Do you have any religion?”). Family information on youths included household circumstances (living with the father and mother, with only the father, with only the mother, or without parents), mother’s level of education (junior high school and below, senior high school, or college and above), father’s level of education (junior high school and below, senior high school, or college and above), and

household economic status (top, medium, or bottom, based on the annual family income per capita categorized by tertiles as 0–9,999 RMB yuan, 10,000–19,999 RMB yuan, or 20,000 and above RMB yuan).

### Statistical Analysis

Data were input, organized, checked, and analyzed using Stata version 13.0 (STATA Corp., College Station, TX, USA). Sample weights were applied in all analyses according to the population structures of the 2010 Chinese population census (Lohr, 1999). Descriptive data were summarized and  $\chi^2$  tests were used to explore the prevalence of MEPP among male youth by sociodemographic characteristics. Logistic regression was used to calculate the association between sociodemographic factors and MEPP. After univariate analysis, multivariate analysis was conducted by including basic demographic variables, variables that were significant in univariate analysis, and variables that were reported significant in previous studies (Calvert et al., 2013; Coelho et al., 2012; Hall et al., 2016). Finally, age, residence, level of education, religion, household circumstances, and father's level of education were the factors included in the multivariate model. Odds ratios (OR), adjusted odds ratios (aOR), and 95% CIs for these factors were calculated. A two-side  $p$  value less than .05 was considered statistically significant.

Moreover, the social environment context and health resources in urban areas and rural areas were different in China. Rural youths had relatively lower gender equity awareness, received less safe sex education, and made less use of the reproductive health-care services than urban youth (Chen et al., 2016; Wang et al., 2013). Thus, the same model was used for urban and rural samples separately in order to assess the potential heterogeneity in the social factors of MEPP of the two groups.

## Results

### Participant Characteristics

The analytical samples comprised 2,853 sexually active unmarried male youths aged 15–24 years. After weighting, juvenile youths aged 15–17 years accounted for 22.67% of the samples. Urban youth accounted for 55.12%, and 51.47% of analytical samples had attained a senior high school level of education. Nearly half of the samples (47.24%) were employed, and a small part of samples (14.60%) followed a religion at the time of survey. Additional details about family information and characteristics by residence are presented in Table 1.

### Prevalence of MEPP Among Unmarried Male Youths by Sociodemographic Characteristics

Among 2,853 sexually active unmarried male youths, 597 individuals reported 852 pregnancies of their partners during their lifetime. Among these pregnancies, 78.05% ended in induced abortion, and the proportion of the “spontaneous miscarriage,” “birth,” “still pregnant,” and “unknown outcomes” categories were 6.34%, 3.40%, 8.57%, and 3.64%, respectively.

The weighted prevalence rate of MEPP among Chinese unmarried male youths was 20.87% (95% CI [18.85%, 22.88%]). The prevalence was significantly higher among those currently employed, those not living with both father and mother, and those whose father had a lower level of education as compared to their counterparts (Table 2).

### Sociodemographic Factors Associated With MEPP Among Unmarried Male Youths

The associations between sociodemographic characteristics and MEPP are presented in Table 3. Results of multivariate analysis identified that young males living with only the father (OR: 4.16, 95% CI [2.22, 7.8]) and youths whose father had a lower level of education (junior high school or below, OR: 1.60, 95% CI [1.04, 2.46]) were more likely to experience a premarital pregnancy with a partner. The significant associations between the level of education and the religion of youths and MEPP in univariate analyses were fully attenuated after controlling for covariates in the multivariate analysis.

Table 4 depicts the results in urban and rural samples, respectively. Among urban males, in addition to living with only the father and the father's low level of education, Islam was also associated with a higher prevalence of partner premarital pregnancy. Among rural males, those with a lower level of education and living with only their father were more likely to experience a premarital pregnancy with a partner.

## Discussion

There is a growing awareness that young persons are facing enormous challenges around the world. The themes of World Population Day in 2006, 2013, and 2014 are “Being Young is Tough,” “Focus is on Adolescent Pregnancy,” and “Investing in Young People,” respectively. This study investigated the prevalence and associated sociodemographic factors of MEPP among Chinese unmarried male youths. Results indicated that 20.87% of sexually active unmarried male youths reported to have experienced a premarital pregnancy with a partner, which



**Table 2.** Prevalence of Any MEPP Among Unmarried Male Youth.

Characteristics		N	Males with any MEPP	
			Weighted prevalence (%, 95% CI)	<i>p</i>
Age	15–17 years	52	19.95 [13.67, 26.23]	.709
	18–24 years	545	21.18 [19.54, 22.82]	
Residence	Urban	350	19.91 [17.86, 21.97]	.328
	Rural	247	22.04 [18.33, 25.74]	
Level of education	Junior high school or below	115	23.91 [19.19, 28.63]	.080
	Senior high school	279	21.42 [18.19, 24.66]	
	College or above	203	18.47 [16.11, 20.84]	
Employment status	Student at school	166	18.58 [14.81, 22.34]	.027
	Working nonstudent	370	23.81 [21.58, 26.04]	
	Nonstudent not working	61	18.73 [13.44, 24.02]	
Religion	Buddhism	56	21.10 [15.07, 27.13]	.141
	Islam	27	40.44 [24.15, 56.74]	
	Christianity	19	25.05 [14.92, 35.19]	
	Others	8	34.03 [2.43, 65.62]	
	None	487	19.49 [17.45, 21.53]	
Household circumstance	Living with the father and mother	517	18.95 [17.08, 20.82]	.011
	Living with only the father	46	51.60 [36.44, 66.76]	
	Living with only the mother	14	21.52 [10.15, 32.90]	
	Without parents	20	24.53 [12.23, 36.83]	
Mother's level of education	Junior high school or below	398	21.64 [19.08, 24.20]	.505
	Senior high school	147	20.32 [16.50, 24.13]	
	College or above	52	17.70 [11.24, 24.17]	
Father's level of education	Junior high school or below	344	24.26 [21.22, 27.30]	.002
	Senior high school	188	18.12 [15.07, 21.16]	
	College or above	65	15.40 [10.38, 20.43]	
Household economic status	Top	263	20.99 [17.97, 24.00]	.462
	Medium	184	19.21 [15.96, 22.46]	
	Bottom	150	22.63 [18.17, 27.08]	

Note. N refers to sample number; prevalence results are weighted. MEPP = male experience of premarital pregnancy.

is much higher than the rate of male experience of unintended pregnancy in France (5%; Kågesten et al., 2015) and a little higher than a previous report in Shanghai (17.7%; He & Blum, 2013). The different definitions and measures of pregnancy in these studies may explain this. The prevalence in this study is based on a lifetime report, while the results in France cover the past 5 years in the lives of respondents (Kågesten et al., 2015). However, given the fact that the sexually active time span of the youths surveyed is relatively short, the higher nationwide prevalence of MEPP is a considerable challenge for reproductive health promotion work in China.

The current study indicated that according to the males' reports, 78.05% of premarital pregnancies ended in induced abortion, which is considerably higher than the percentage reported by French males (45%) and females in other countries (around 40%–50%; Kågesten et al., 2015; Singh, Sedgh, & Hussain, 2010). This could

possibly be explained by the social repression by Chinese traditional culture of nonmarital childbearing and the strict family planning policy in China. Unmarried youths tend to choose induced abortion due to the fear of social stigma and the legal discrimination against illegitimate children (Kim, 2017). It also indicates that most premarital pregnancies among Chinese unmarried youths are unintended, defined as a mistimed or unwanted pregnancy at the time of conception (Finer & Zolna, 2014). Given the large population of China, such a high rate of induced abortion implies a potential demand for reproductive health services and highlights an urgent need for an integrated strategy focusing on male youths.

There are significant associations between the sociodemographic factors of male youths and MEPP. Higher risk of MEPP was found in youths living with only their father. Previous studies suggest that parent–child closeness, parental supervision, and monitoring of children

**Table 3.** Sociodemographic Factors Associated With MEPP Among Unmarried Male Youth.

Variables	Univariate analysis			Multivariate analysis <sup>a</sup>		
	OR	95% CI	<i>p</i>	aOR	95% CI	<i>p</i>
<b>Age</b>						
18–24 years	1					
15–17 years	0.93	[0.62, 1.39]	.715	0.74	[0.49, 1.12]	.151
<b>Residence</b>						
Rural	1					
Urban	0.88	[0.68, 1.13]	.318	0.98	[0.74, 1.3]	.903
<b>Level of education</b>						
College or above	1			1		
Senior high school	1.20	[0.94, 1.54]	.144	1.08	[0.86, 1.36]	.497
Junior high school or below	1.39	[1.02, 1.88]	.035	1.23	[0.88, 1.73]	.221
<b>Religion</b>						
None	1			1		
Buddhism	1.10	[0.75, 1.62]	.612	1.12	[0.75, 1.66]	.584
Islam	2.80	[1.41, 5.58]	.003	1.71	[0.85, 3.44]	.131
Christianity	1.38	[0.79, 2.41]	.255	1.30	[0.72, 2.35]	.392
Others	2.13	[0.52, 8.75]	.294	1.41	[0.46, 4.34]	.546
<b>Household circumstance</b>						
Living with the father and mother	1			1		
Living with only the father	4.56	[2.46, 8.47]	<.001	4.16	[2.22, 7.8]	<.001
Living with only the mother	1.17	[0.59, 2.33]	.647	1.02	[0.5, 2.09]	.948
Without parents	1.39	[0.71, 2.73]	.339	1.23	[0.61, 2.47]	.566
<b>Father's education level</b>						
College or above	1			1		
Senior high school	1.22	[0.79, 1.88]	.382	1.27	[0.85, 1.92]	.246
Junior high school or below	1.76	[1.16, 2.68]	.008	1.60	[1.04, 2.46]	.032
<b>Mother's education level</b>						
College or above	1					
Senior high school	1.19	[0.72, 1.96]	.507			
Junior high school or below	1.28	[0.8, 2.05]	.296			
<b>Employment status</b>						
Nonstudent not working	1					
Working nonstudent	1.36	[0.94, 1.96]	.105			
Student at school	0.99	[0.65, 1.52]	.963			
<b>Household economic status</b>						
Top	1					
Medium	0.90	[0.68, 1.18]	.435			
Bottom	1.10	[0.81, 1.51]	.546			

Note. <sup>a</sup>Mother's education, employment, and household economic status were not included. Results are weighted. aOR = adjusted odds ratio; MEPP = male experience of premarital pregnancy; OR = odds ratio.

(which could be reinforced by living with parents) were associated with the postponement of sexual initiation, a more consistent use of contraception, and a reduced risk of sexual risk-taking behaviors or early pregnancy among adolescents (Huebner & Howell, 2003; Miller, 2002). Maternal support would be particularly important for the reproductive well-being of adolescents, since mothers may provide important sexual knowledge and a source of support in the decision-making process of adolescents in relation to pregnancy and induced abortion (Ralph,

Gould, Baker, & Foster, 2014). In addition, a low level of education of the father was also associated with an increased risk of MEPP. It may be explained by the fact that a father's education could affect the pattern of rearing a son in the Chinese context, that is, that a father with a low level of education would coddle his son or be less involved in his education, thus allowing the development of open sexual attitudes and behaviors (Song, Shen, Li, & Xiang, 2004). However, the significant associations between the level of education and the religion of youths

**Table 4.** Multivariate Analysis of Sociodemographic Factors Associated With MEPP Among Male Youth, by Residence.

Variables	Urban males			Rural males		
	aOR	95% CI	<i>p</i>	aOR	95% CI	<i>p</i>
Age						
18–24 years	1					
15–17 years	0.56	[0.36, 0.88]	.012	0.92	[0.47, 1.79]	.797
Level of education						
College or above	1			1		
Senior high school	0.93	[0.7, 1.23]	.620	1.33	[0.88, 1.99]	.175
Junior high school or below	0.94	[0.56, 1.55]	.798	1.57	[1.01, 2.56]	.049
Religion						
None	1			1		
Buddhism	1.38	[0.9, 2.1]	.135	0.86	[0.44, 1.71]	.669
Islam	2.35	[1.21, 4.59]	.012	1.11	[0.24, 5.1]	.891
Christianity	1.87	[0.93, 3.78]	.080	0.68	[0.18, 2.55]	.571
Others	1.09	[0.38, 3.12]	.874	1.43	[0.24, 8.73]	.696
Household circumstance						
Living with the father and mother	1			1		
Living with only the father	3.61	[2.13, 6.11]	<.001	4.56	[1.6, 13.02]	.005
Living with only the mother	1.08	[0.47, 2.49]	.864	0.80	[0.15, 4.29]	.793
Without parents	1.00	[0.49, 2.06]	.991	1.42	[0.31, 6.41]	.651
Father's level of education						
College or above	1			1		
Senior high school	1.62	[1.13, 2.33]	.009	0.55	[0.21, 1.44]	.226
Junior high school or below	2.26	[1.54, 3.31]	<.001	0.67	[0.27, 1.64]	.377

Note. Results are weighted. aOR = adjusted odds ratio; MEPP = male experience of premarital pregnancy.

and MEPP in univariate analyses of the total samples were attenuated after controlling for covariates in the multivariate analysis. That indicates that although a high rate of MEPP can be found among those with a lower level of education or among those who follow a religion, this phenomenon may be expressed with omitted variable bias.

Furthermore, sociodemographic factors were different between rural youth and urban youth. First, a lower level of education was associated with MEPP in rural males but not in urban males. Previous studies have reported a similar association between education and early pregnancy among population with different cultural backgrounds, such as young sub-Saharan African males (Bankole, Singh, Hussain, & Oestreicher, 2009) and British females (Wellings et al., 2013). Youths with a higher level of education have stayed in school for a longer period and so are likely to have had greater access to sexual and reproductive health knowledge; they may also have higher income and better access to contraception to prevent premarital pregnancy (Bankole et al., 2009; He & Blum, 2013). Although China has experienced rapid socioeconomic development in recent decades, a severe imbalance of health services still exists

between urban and rural sectors. Sex education and contraception services are always inaccessible for youths living in rural areas, whereas these are much more prevalent in urban areas. Therefore, a school-based education program may be the most available resource for rural youths to obtain the necessary reproductive health knowledge to prevent early or premarital pregnancy (Thompson et al., 2017).

Second, a lower level of education of the father was associated with MEPP in urban males but not in rural samples. The insignificant association in rural population may be explained by the attenuation of father's education influence due to a corresponding lower efficiency of rural parents in China. A previous study indicated that parents, especially fathers in Chinese rural families, often have to earn an income outside their village, therefore sacrificing the time to monitor and communicate with their children (Zhao, 2018), which was demonstrated to be an effective way to prevent sexual risk-taking behaviors among youths (Miller, 2002).

In addition, the current study indicated that Islamic religiosity was associated with an elevated risk of MEPP among urban male youths, which contributes to the literature in this area. Though rare previous research



reported this association among male adolescents and youths, one study from Malaysia (Wong, 2012) suggested that female youth with Islamic religion had a lower level of reproductive health knowledge, which could also be a possible pathway to explain the higher risk of MEPP among Muslims male youth. Additionally, because of the prohibition against premarital sex in certain religious cultures, youth who were raised in a religious household may be less willing or able to acknowledge and plan their own sexual behavior and to take the necessary steps to obtain contraception (Raine, Minnis, & Padian, 2003). The association between religious affiliation and MEPP was only significant among urban males, which indicated that religiosity may not be a significant factor for rural male youths. Our data suggested that compared with rural youth (22.73%), a greater proportion of Islamic youth in urban areas (35.19%) were not living with their parents, which may cause a higher risk of MEPP since parental supervision was considered to be an effective measure to reduce adolescent pregnancy (Miller, Benson, & Galbraith, 2001). However, given a limited theoretical explanation for this issue, further research is required to explore the in-depth causation.

This study has several limitations. First, the data used in this study only focused on unmarried male youths, so MEPP and its sociodemographic factors among married youths could not be observed. Second, due to the cross-sectional design, causal relationships could not be properly examined, and results should be interpreted with caution. In addition, the YARHC required consent from an adult guardian for respondents under 18 years of age, which may be a cause why juvenile youths were not adequately sampled due to not being allowed to participate in the survey by their parents. And youths in Tibet, Hong Kong, Macao, and Chinese Taiwan were excluded from this study due to “geographic, political, economic, and cultural reasons,” so the results can only represent the situation in other Mainland China regions. Moreover, premarital pregnancy remains a very sensitive sexual topic in China, especially among youths; worries about embarrassment and shame may lead to underreporting. The experience and outcomes of MEPP were self-reported from the perspective of male youths, and thus the rates may be further underestimated in case such pregnancies were not reported to them by their female partners. The design of this study is unlikely to fully capture the multidimensional construct of MEPP among Chinese male youths. Regardless of its limitations, this nationally representative study provides a new and broader understanding of premarital pregnancy among Chinese youths from the perspective of males.

## Conclusion

This study presented the prevalence of MEPP and its association with various key sociodemographic factors among Chinese unmarried male youths. The findings provided evidence of the experience of premarital pregnancy from the perspective of male youths, contributing to the literature on this subject in developing nations in a non-Western context. The findings highlight that in addition to the concern for the sexual and reproductive health of females, strategies and interventions targeting male youths to improve their sexual education and reproductive services are warranted, as well as sufficient public awareness of male sexual responsibility.

## Declaration of Conflicting Interests

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## References

- Bankole, A., Singh, S., Hussain, R., & Oestreich, G. (2009). Condom use for preventing STI/HIV and unintended pregnancy among young men in Sub-Saharan Africa. *American Journal of Men's Health, 3*(1), 60.
- Calvert, C., Baisley, K., Doyle, A. M., Maganja, K., Changalucha, J., Watsonjones, D., ... Ross, D. A. (2013). Risk factors for unplanned pregnancy among young women in Tanzania. *Journal of Family Planning & Reproductive Health Care, 39*(4), e2–e2.
- Chen, M., Liao, Y., Liu, J., Fang, W., Hong, N., Ye, X., ... Liao, W. (2016). Comparison of sexual knowledge, attitude, and behavior between female Chinese college students from urban areas and rural areas: A hidden challenge for HIV/AIDS control in China. *BioMed Research International, 2016*, 1–10.
- Coelho, E. D. A. C., Andrade, M. L. D. S., Vitoriano, L. V. T., Souza, J. D. J., Silva, D. O. D., Gusmão, M. E. N., ... Almeida, M. S. (2012). Association between unplanned pregnancy and the socioeconomic context of women in the area of family health. *Acta Paulista De Enfermagem, 25*(3), 415–422.
- Finer, L. B., & Zolna, M. R. (2014). Shifts in intended and unintended pregnancies in the United States, 2001–2008. *American Journal of Public Health, 104*(Suppl 1), S43.
- Goossens, G., Kadji, C., & Delvenne, V. (2015). Teenage pregnancy: A psychopathological risk for mothers and babies? *Psychiatria Danubina, 27*(Suppl 1), S499.

- Guzzo, K. B., & Furstenberg, F. F. (2007). Multipartnered fertility among American men. *Demography*, *44*(3), 583–601. doi:10.1353/dem.2007.0027
- Hall, J. A., Barrett, G., Phiri, T., Copas, A., Malata, A., & Stephenson, J. (2016). Prevalence and determinants of unintended pregnancy in Mchinji District, Malawi; Using a conceptual hierarchy to inform analysis. *Plos One*, *11*(10), e0165621.
- He, H., & Blum, R. W. (2013). Prevalence of unintended pregnancy and its associated factors among sexually active never-married youth in Shanghai. *Journal of Paediatrics and Child Health*, *49*(11), 912–918. doi:10.1111/jpc.12426
- Hemminki, E., Wu, Z., Cao, G. Y., & Viisainen, K. (2005). Illegal births and legal abortions – The case of China. *Reproductive Health*, *2*(1), 5.
- Huebner, A. J., & Howell, L. W. (2003). Examining the relationship between adolescent sexual risk-taking and perceptions of monitoring, communication, and parenting styles. *Journal of Adolescent Health*, *33*(2), 71–78.
- Jing, F. (2004). Health sector reform and reproductive health services in poor rural China. *Health Policy and Planning*, *19*(Suppl 1), i40–i49.
- Kågesten, A., Bajos, N., Bohet, A., & Moreau, C. (2015). Male experiences of unintended pregnancy: characteristics and prevalence. *Human Reproduction*, *30*(1), 186.
- Kim, K. (2017). Trends and determinants of premarital conception: Love in Korea. *International Journal of Japanese Sociology*, *26*(1), 23–38.
- Lindberg, L. D., & Kost, K. (2014). Exploring U.S. Men's birth intentions. *Maternal and Child Health Journal*, *18*(3), 625–633.
- Lohr, S. (1999). *Sampling: Design and analysis*. Pacific Grove, CA: Duxbury Press.
- Miller, B. C. (2002). Family influences on adolescent sexual and contraceptive behavior. *Journal of Sex Research*, *39*(1), 22.
- Miller, B. C., Benson, B., & Galbraith, K. A. (2001). Family relationships and adolescent pregnancy risk: A research synthesis. *Developmental Review*, *21*(1), 1–38.
- Raine, T., Minnis, A. M., & Padian, N. S. (2003). Determinants of contraceptive method among young women at risk for unintended pregnancy and sexually transmitted infections. *Contraception*, *68*(1), 19–25.
- Ralph, L., Gould, H., Baker, A., & Foster, D. G. (2014). The role of parents and partners in minors' decisions to have an abortion and anticipated coping after abortion. *Journal of Adolescent Health*, *54*(4), 428–434.
- Sassler, S., Miller, A., & Favinger, S. M. (2009). Planned parenthood?: Fertility intentions and experiences among cohabiting couples. *Journal of Family Issues*, *30*(2), 206–232.
- Singh, S., Sedgh, G., & Hussain, R. (2010). Unintended pregnancy: Worldwide levels, trends, and outcomes. *Studies in Family Planning*, *41*(4), 241.
- Song, H., Shen, J., Li, B., & Xiang, X. (2004). A study of relationship between parental education and parental rearing patterns of college students. *Zhong Guo Min Kang Yi Xue*, *16*(9), 571–572.
- Thompson, E. L., Mahony, H., Noble, C., Wang, W., Ziemba, R., Malmi, M., ... Daley, E. M. (2017). Rural and urban differences in sexual behaviors among adolescents in Florida. *Journal of Community Health*, *43*(1), 1–5.
- UNFPA. (2015). *Girlhood, not motherhood: Preventing adolescent pregnancy*. New York, NY: United Nations Population Fund.
- Vázqueznavas, F., Vázquezrodríguez, C. F., Saldívargonzález, A. H., Vázquezrodríguez, E. M., Córdovafernández, J. A., Felizardoávalos, J., & Sánchezmárquez, W. (2014). Unplanned pregnancy in adolescents: Association with family structure, employed mother, and female friends with health-risk habits and behaviors. *Journal of Urban Health*, *91*(1), 176–185.
- Wang, L., Cui, Y., Zhang, L., Wang, C., Jiang, Y., & Shi, W. (2013). Influence of gender equity awareness on women's reproductive healthcare in rural areas of midwest China. *International Journal of Gynecology & Obstetrics*, *123*(2), 155–159.
- Wellings, K., Jones, K. G., Mercer, C. H., Tanton, C., Clifton, S., Datta, J., ... Macdowall, W. (2013). The prevalence of unplanned pregnancy and associated factors in Britain: findings from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3). *Lancet*, *382*(9907), 1807–1816.
- Wong, L. P. (2012). An exploration of knowledge, attitudes and behaviours of young multiethnic Muslim-majority society in Malaysia in relation to reproductive and premarital sexual practices. *BMC Public Health*, *12*(1), 865.
- World Health Organization. (2017). *Family planning evidence brief: Reducing early and unintended pregnancies among adolescents*. Retrieved from <http://www.who.int/iris/handle/10665/255862>
- Zhao, S. B. (2018). Changes in parental time with children in China, 2004–2011. *Journal of Family History*, *43*(2), 204–222.
- Zheng, X., Chen, G., Han, Y., Chen, H., Lin, T., & Qiu, Y. (2010). Survey of youth access to reproductive health in China. *Ren Kou Yu Fa Zhan*, *16*, 2–16.