Masturbation as a compensation for partnered-sex among enforced male bachelors in rural China – findings from a survey conducted in the context of a deficit of females

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Abstract

Background: Due to the change in sex ratio at birth over the past decades, China has been facing a growing female deficit that has led to a ''male marriage squeeze''. In China, bachelorhood implies that sexual needs may barely be met through sexual intercourse with a regular partner.
Methods: Using data from a survey conducted in JC District, Anhui, in August 2008, the present study adopted descriptive, stepped binary logistic and linear regression methods to analyze masturbation behaviors among enforced male bachelors in rural China in comparison to married men of the same age.
Results: The prevalence of sexual intercourse among enforced male bachelors was significantly lower than that among married men. Also, while the prevalence of masturbation did not vary much by marital status, its frequency (number of times the respondent masturbated) was significantly higher among unmarried than married men. Compared to the married men, the enforced male bachelors with more acceptable attitudes toward masturbation were more likely to masturbate and to masturbate more often.
Conclusions: In the context of a male marriage squeeze, for those enforced male bachelors who hold acceptable attitudes toward masturbation, it truly acts as a compensation for partnered sexual intercourse, even if the frequency of masturbation remains rather low on average. © 2012 WPMH GmbH. Published by Elsevier Ireland Ltd.

Introduction

A shortage of females has long been a component of China's population [1]. Since the 1980s, with the decline in fertility and the development of antenatal sex identification technologies, the strong preference for a son has led to a change in the sex ratio at birth, with an increase in the number of males [2], to the point where it has been estimated that the female shortage might be over 30 million over the course of the 21st century [1,3]. Consequently, since the year 2000, China has been facing a "male marriage squeeze", with an

annual male surplus of 10% in the marriage market [4–8]. In this context and considering the female propensity to "marry up", the most squeezed population group is overwhelmingly composed of men whose economic and social situation is precarious [9,10]. In some rural areas, enforced male bachelorhood is now a common feature. Such men are called the "bare branches" ("guang gun'er" in Chinese), and most of them display the following characteristics: they are located in remote rural areas, live in economic poverty, and are short of social capital and resources [11]. According to the pilot survey conducted among enforced male bachelors in one rural area, if males are aged between 28 and 35, they still have a small chance of getting married, but apparently less than those aged below 28 years; while those aged above 35 years basically have no such chance any longer [12].

In China, marriage is still almost universal and remains the main legitimate and socially acceptable setting for sexual activity [13,14]. In this context, bachelorhood implies that sexual needs may hardly be met through sexual intercourse with a regular partner within marriage.

Masturbation can be considered a sexual practice, as it induces sexual pleasure through stimulation of the genitals or other erogenous zones [15–17]. The prevalence and frequency of male masturbation varies greatly across studies, populations and countries [16, 18–23]. Although the existing literature indicates a certain relationship between partnered sexual intercourse and masturbation, there are still debates on the nature of this relationship. However, masturbation can be viewed as either a "compensatory" practice, that is to say to overcome the absence of a partner or the lack of sexual satisfaction procured by the relationship with the partner [22], or as a "complementary" practice, that is to say independent from sexual activity involving a partner and practiced by individuals having satisfying partnered sexual relationships [16,18,24,25]. Marital status, educational level, income level and health status have also been shown to be correlated with the prevalence and frequency of masturbation [18,21,22,26].

The study presented here attempts to answer the following questions: Is the female shortage on the marriage market likely to induce an increase in the prevalence and frequency of masturbation? Does masturbation act as a compensation for the absence of partnered-sex or as a complement to the sexual experiences of male bachelors?

Data and methods

Samples

To answer the questions posed above, a survey was conducted on a sample of residents from the JC rural District, CH City of Anhui province. Like the rest of China, this county shows a marked sex imbalance in infancy and early childhood (under the age of 5 years): there being 118.9 boys per 100 girls (against 120.2: 100 nationally in 2000), or about 15% more boys above the level normally expected in this age group [27]. A male surplus was also observed in the unmarried population aged 28 years and over, where the sex ratio was 177.1 males per 100 females.

For the purpose of this survey, and given the social and family norms prevailing in China where male marriage takes place at a relatively early age (national average was 25.7 years in 2000), 28 years was taken as a threshold age for rural male residents to have, more or less, had a chance for marriage as previously stated, and, therefore, enforced bachelors were defined as those men aged 28 years or above who were still single.

Because of the sensitivity of sex-related issues in China, data were collected using a Computer Assisted Personal Interview (CAPI) questionnaire. The survey sample was randomly selected through cluster sampling according to the list of married and unmarried men aged 28 or above provided by the Family Planning Bureau of each township.

When filling in the questionnaires, respondents were brought in to a separate and relatively enclosed area. For issues deemed "sensitive", the investigator received strict instructions to leave the respondent to answer such questions by themselves by moving to stand in front of the respondent, so that the investigator could not see the computer screen. Unless the respondent sought help, the investigator stood at a distance. In cases where the respondent was illiterate (38 cases), or had a low educational level, the investigator,

with the consent of the respondent, read out each question and explained each step and how to use the laptop. A total of 665 men participated in this survey, but 44 (6.6%) abandoned the survey for various reasons (e.g. privacy). In the end, 621 valid questionnaires were obtained.

Measures

All the measurement variables, including masturbation, used in this study were inspired by those defined in various existing studies mainly conducted in China, such as those of Pan Suiming and Liu Dalin [22,24], and they had been tested for validity in a previous qualitative study conducted by the authors' research team in YC district in Henan.

(1) **Prevalence of masturbation**: this was measured by asking "Have you ever masturbated in your life?" with two potential answers: "0 = no; 1 = yes".
(2) **Prevalence of sexual experience**: measured by asking "Have you ever practiced partnered-sex in your life?" with two potential answers: "0 = no; 1 = yes".
(3) **Frequency of masturbation**: measured by asking "How many times have you masturbated in the last month?".
(4) **Frequency of sexual intercourse**: measured by asking "How many times have you practiced sexual intercourse in the last month?"
(5) **Attitudes toward masturbation**: defined as people's viewpoints on masturbation, measured by asking three items namely: "What's your opinion on male masturbation for a man who has no sexual partner? What's your opinion on male masturbation for a man who has a sexual partner? What's your opinion on masturbation as a way to release sexual tension?" with two potential answers for each question: "0 = unacceptable; 1 = acceptable".
(6) **Marital status**: measured by asking "What is your current marital status?" with six potential answers: "1 = never-married and live alone; 2 = live with a partner but unmarried; 3 = married and live with spouse; 4 = married but physically separated from spouse (due to migration); 5 = divorced and live alone; 6 = widowed and live alone". Considering the close

relationship between marital status and the frequency of sexual intercourse in China's social context, the above six points were merged into two, the first being "unmarried and live alone" which included "divorced" and "widowed" men, and the second being "married or cohabitating" which included all married men and men who lived with partners.
(7) **Age**: As mentioned above, 35 years is also used as a threshold age for male marriage in rural China. Therefore, the age variable was categorized into two groups: "below or equal to" and "above" 35 years old.

Three other relevant socioeconomic variables: education, monthly income, and self-evaluation on health status, were also included in this study.

Data Processing and Analyses

In order to answer the questions proposed above, a comparison analysis was first conducted between married and unmarried groups using the crosstabulation method on all categorical and ordinal variables including "prevalence of masturbation", "prevalence of sexual experience", "attitude towards masturbation for a man who has no sexual partner", "attitude towards masturbation for a man who has a sexual partner", "attitude towards masturbation as a way to release sexual tension", "age", "education" and "income".

Secondly, an independent-samples t test was conducted between married and unmarried groups using the means of the continuous and discrete variables including "frequency of masturbation", "frequency of sexual intercourse" and "self-evaluation on health status".

Thirdly, stepped binary logistic regression models were run with "prevalence of masturbation" as the dependent variable, and "prevalence of sexual experience", "frequency of sexual intercourse", "attitude towards masturbation for a man who has no sexual partner", "attitude towards masturbation for a man who has a sexual partner", and "attitude towards masturbation as a way to release sexual tension" as independent variables, with marital status, age, education, income and self-evaluation on health status as control variables.

Fourthly, stepped linear regression models were run with ''frequency of masturbation'' as the dependent variable, and ''prevalence of sexual experience'', ''frequency of sexual intercourse'', ''attitude towards masturbation for a man who has no sexual partner'', ''attitude towards masturbation for a man who has a sexual partner'', and ''attitude towards masturbation as a way to release sexual tension'' as independent variables, with marital status, age, education, income and self-evaluation on health status as control variables.

Results

As indicated in Table 1, the prevalence of masturbation in the total sample was 41.1%, and that for sexual experience was 75.5%, which is reasonable considering that the total sample included 55.4% unmarried men. In the month preceding the survey, the average frequency of masturbation was 0.7, with values ranging from 0–15 times, and the average frequency of sexual intercourse was 2.1, with values ranging from 0–8 times.

In the total sample, 62.6% of interviewees had an attitude of acceptance towards men who masturbate if they have no sexual partner. But only 48.8% held such an opinion regarding men who have a sexual partner. Also, 61.7% of the interviewees had an attitude of acceptance towards masturbation as a way to release sexual tension. The mean score for self-evaluation on health status in the total sample was 3.87, i.e. between ''3 = same as the average'' and ''4 = better than the average''. In terms of age, 37.2% were aged 35 years or below and 62.8% were more than 35 years old. The educational level of the respondents in the total

Table 1 Descriptive information for each variable

Variable	Description of variable	Frequency (%) or Mean (SD)	Min/max
The prevalence of masturbation (''Have you ever masturbated?'')	0 = no	366 (58.9%)	0
	1 = yes	255 (41.1%)	1
The prevalence of sexual intercourse (''Have you ever practiced partnered sex?'')	0 = no	152 (24.5%)	0
	1 = yes	469 (75.5%)	1
Frequency of masturbation	Frequency of masturbation over the past month	0.70 (1.58)	0/15
Frequency of sexual intercourse	Frequency of sexual intercourse over the past month	2.05 (2.33)	0/8
Attitudes toward masturbation for a man who has a sexual partner	0 = unacceptable	232 (37.4%)	0
	1 = acceptable	389 (62.6%)	1
Attitudes toward masturbation for a man who has no sexual partner	0 = unacceptable	318 (51.2%)	0
	1 = acceptable	303 (48.8%)	1
Attitudes toward masturbation as a way to release sexual pressure	0 = unacceptable	238 (38.3%)	0
	1 = acceptable	383 (61.7%)	1
Marital status	0 = unmarried	344 (55.4%)	0
	1 = married	277 (44.6%)	1
Age	0 = 35 years old and below	231 (37.2%)	0
	1 = above 35 years old	390 (62.8%)	1
Education	1 = illiterate	38 (6.1%)	1
	2 = primary school	174 (28.0%)	2
	3 = junior high school	284 (45.7%)	3
	4 = senior high school	96 (15.5%)	4
	5 = junior college and above	29 (4.7%)	5
Income	1 = less than 500 Yuan a month	222 (35.7%)	1
	2 = between 500-1000 Yuan a month	168 (27.1%)	2
	3 = more than 1000 Yuan a month	231 (37.2%)	3
Self-evaluation on health status	One item with five-point measurement	3.87 (1.06)	1/5

sample was as follows: primary school, 28.0%; junior high school, 45.7%; and senior high school, 4.7%; and their average monthly income was rather low: 35.7% earned less than 500 Yuan, 27.1% between 500 and 1000 Yuan, and 37.2% earned 1000 Yuan or more.

As indicated in Table 2, there was no significant difference in the prevalence of masturbation between married and unmarried men: 42.5% and 46.2%, respectively. By contrast, only 56.6% of the unmarried men had ever had sexual intercourse at least once, while almost all the married men have, logically, ever had such an experience (99.3%). It was found that 58.0% of the unmarried men held an attitude of acceptability towards masturbation for men who have no sexual partner, significantly lower than the 68.2% found among married men. Similarly, 44.9% of the unmarried men held an attitude of acceptability towards masturbation for men who have a sexual partner, significantly lower than the 53.4% reported by married men. Finally, 57.4% of the unmarried men held an attitude of acceptability towards masturbation as a way to release sexual tension, again significantly lower than the 66.8% of married men who found such a practice acceptable.

Unmarried men had lower educational levels and incomes compared to married men, in that fewer than 10% of them had progressed above senior high school (while the percentage in this category exceeded 30% for the married men). Also, more than one in two unmarried men earned a monthly income below 500 Yuan, while more than one in two married men had a monthly income higher than 1000 Yuan (see Table 2).

The average frequency of sexual intercourse in the month preceding the survey was 0.9 times for unmarried men, which was significantly lower than that for the married men (3.4 times). By contrast, their average frequency of masturbation was 0.8 times per month in the month preceding the survey, a percentage slightly, but significantly, higher than that of the married men (0.5 times a month).

The possible substitution relationship between the prevalence of masturbation and the prevalence of sexual experience, as well as the frequency of sexual intercourse, was first tested using models 1 to 3 (Table 3). Model 1, which tested the impact of the prevalence and

frequency of sexual intercourse on the prevalence of masturbation, indicated that those men who had ever had a partnered sexual experience were more likely to masturbate (with low values for Cox & Snell $R^2 = 0.010$ and Nagelkerke $R^2 = 0.014$), but the frequency of sexual intercourse had no significant impact on the prevalence of masturbation.

In model 2, which was the same as model 1 but included the three relevant variables for measuring attitudes towards masturbation, the positive correlation between prevalence of sexual intercourse and prevalence of masturbation remained significant but with a slightly decreased value for the regression coefficient, which dropped from 1.73 (model 1) to 1.49 (model 2). The frequency of sexual intercourse was significant (at $P < 0.05$ only) but with a slightly decreased value for the regression coefficient of 0.93 (compared to 0.97 in model 1), but the three newly included variables all had strongly significant positive impacts on the prevalence of masturbation with regression coefficients of 2.05, 1.47 and 3.71, respectively, resulting in a greatly increased Cox & Snell R^2 value of 0.17 (compared to 0.01 in model 1) and Nagelkerke R^2 of 0.23 (compared to 0.014 in model 1).

Model 3 was established on the same basis as model 2 but also included the following control variables: marital status, age, educational level, monthly income and self-evaluation on health status. It appeared in this model that the positive correlation between the prevalence of masturbation and that of sexual experience remained significant, but the impact of the frequency of sexual intercourse on the prevalence of masturbation disappeared. The positive correlation between all three of the ''attitudes towards masturbation'' variables and the prevalence of masturbation also remained significant, with relatively stable regression coefficients. The newly added control variables ''marital status'' and ''monthly income'' both had a strong significant impact on the prevalence of masturbation, with regression coefficients of 0.49 and 1.61, respectively, which implied that unmarried men were more likely to masturbate than married men, and those men whose monthly income was higher than 1000 Yuan were more likely to masturbate than those with a monthly income lower than 500 Yuan. Apart from these findings, the other newly added

Table 2 Comparative analyses between unmarried and married men

	Unmarried		Married	
Prevalence of masturbation	Frequency	%	Frequency	%
No	197	53.8	169	57.5
Yes	146	46.2	108	42.5
X^2 test (unmarried vs. married)	$X^2 = 0.69$ ($P = 0.41$) N/S			
Sexual experiences	Frequency	%	Frequency	%
No	149	43.4	2	0.7
Yes	194	56.6	275	99.3
X^2 test (unmarried vs. married)	$X^2 = 149.48$($P = 0.000$)***			
Attitude towards masturbation for a man who has no sexual partner	Frequency	%	Frequency	%
Unacceptable	144	42.0	88	31.8
Acceptable	199	58.0	189	68.2
X^2 test (unmarried vs. married)	$X^2 = 6.83$($P = 0.009$)**			
Attitude towards masturbation for a man who has a sexual partner	Frequency	%	Frequency	%
Unacceptable	189	55.1	129	46.6
Acceptable	154	44.9	148	53.4
X^2 test (unmarried vs. married)	$X^2 = 4.47$($P = 0.035$)*			
Attitude towards masturbation as a way to release sexual tension	Frequency	%	Frequency	%
Unacceptable	146	42.6	92	33.2
Acceptable	197	57.4	185	66.8
X^2 test (unmarried vs. married)	$X^2 = 5.67$($P = 0.017$)**			
Age	Frequency	%	Frequency	%
35 years and below	129	37.5	102	36.8
Above 35 years	215	62.5	175	63.2
X^2 test (unmarried vs. married)	$X^2 = 0.14$($P = 0.91$)N/S			
Education	Frequency	%	Frequency	%
Illiterate	36	10.5	2	0.7
Primary school	137	39.8	35	13.4
Junior high school	134	39.0	150	54.2
Senior high school	24	7.0	72	26
Junior college and above	13	3.8	16	5.8
X^2 test (unmarried vs. married)	$X^2 = 116.17$($P = 0.000$)***			
Income	Frequency	%	Frequency	%
Less than 500 Yuan a month	172	50.1	50	18.1
Between 500-1000 Yuan a month	84	24.5	84	30.3
More than 1000 Yuan a month	87	25.4	143	51.6
X^2 test (unmarried vs. married)	$X^2 = 77.64$($P = 0.000$)***			
Frequency of masturbation over past month	Mean	SD	Mean	SD
	0.83	1.85	0.51	1.06
t test (unmarried vs. married)	$t = 2.74$($P = 0.006$)**			
Frequency of sexual intercourse over past month	Mean	SD	Mean	SD
	0.94	1.51	3.43	2.43
t test (unmarried vs. married)	$t = -14.83$($P = 0.000$)***			
Self-evaluation on health status	Mean	SD	Mean	SD
	3.71	1.15	4.08	0.89
t test (unmarried vs. married)	$t = -4.41$($P = 0.000$)***			

SD, standard deviation; N/S, not significant. *$P<0.05$; **$P<0.01$; ***$P<0.001$.

Table 3 Determinants for the prevalence of masturbation

Dependent variable: prevalence of masturbation	Model 1	Model 2	Model 3
Independent variables			
Sexual experiences	1.73*	1.49*	1.71*
Frequency of sexual intercourse	0.97	0.93*	0.98
Attitudes toward masturbation for a man who has no sexual partner		2.05**	2.09**
Attitudes toward masturbation for a man who has a sexual partner		1.47+	1.48+
Attitudes toward masturbation as a way to release sexual tension		3.71***	3.80***
Control variables			
Marital status (reference category = unmarried): married			0.49**
Age (reference category = 35 years old and below): above 35 years of age			1.09
Education (reference category = illiterate): primary school			1.38
: junior high school			0.83
: senior high school			1.18
: junior college and above			1.18
Monthly income (reference category = < 500 Yuan): 500–1000 Yuan			1.49
: >1000 Yuan			1.61*
Self-evaluation on health status:			1.11
: very good			1.25
2 Log Likelihood	834.62*	723.06***	702.43***
Cox & Snell R^2	0.010	0.17	0.20
Nagelkerke R^2	0.014	0.23	0.27

$^+P<0.1$; $^*P<0.05$; $^{**}P<0.01$; $^{***}P<0.001$.

control variables had no significant impact in this model on the prevalence of masturbation. In model 3, the Cox & Snell R^2 increased from 0.17 to 0.20 and the Nagelkerke R^2 increased from 0.23 to 0.27.

The relationship between the frequency of masturbation, the prevalence of sexual experiences and the frequency of sexual intercourse was also tested in models 4–6 (Table 4). Model 4, which tested the impact of the prevalence of sexual experiences, as well as the frequency of sexual intercourse, on the frequency of masturbation, indicated that there was no significant correlation between the three variables with very low values for the regression coefficients and adjusted R^2.

In model 5, which was the same as model 4 but also included the three "attitude towards masturbation" variables, the correlation between the prevalence of sexual experience, the frequency of sexual intercourse and the frequency of masturbation remained non-significant, and two of the three newly included variables appeared to have a strong significantly positive impact on the frequency of masturbation with a regression coefficient of 0.10 for "attitude towards masturbation for a

man who has no sexual partner", and a coefficient of 0.15 for "attitude towards masturbation as a way to release sexual tension". For model 5, the adjusted R^2 had increased to 0.046.

Model 6 was established on the same basis as model 5 but also included the following control variables: marital status, age, educational level, monthly income and self-evaluation on health status. It appeared, in this model, that the correlation between the prevalence of sexual experiences, the frequency of sexual intercourse and the frequency of masturbation was still non-significant, and that the positive correlation between two of the three relevant "attitudes toward masturbation" variables and the frequency of masturbation remained significant. The control variables "marital status", "monthly income" and "self-evaluation on health status" all had a significant impact on the frequency of masturbation, with regression coefficients of −0.19, 0.09 and 0.09, respectively. Otherwise, the other control variables newly added in this model had no significant impact on the frequency of masturbation. Adjusted R^2 for model 6 was slightly increased at 0.066.

Table 4 Determinants for the frequency of masturbation

Dependent variable: frequency of masturbation	Model 4	Model 5	Model 6
Independent variables			
Sexual experiences	0.06	0.04	0.09+
Frequency of sexual intercourse	−0.07	−0.08+	−0.02
Attitudes toward masturbation for a man who has no sexual partner		0.10*	0.10*
Attitudes toward masturbation for a man who has a sexual partner		0.03	0.02
Attitudes toward masturbation as a way to release sexual pressure		0.14***	0.13**
Control variables			
Marital status (reference category = unmarried): married			−0.19***
Age (reference category = 35 years old and below): above 35 years of age			0.02
Education (reference category = illiterate): primary school			−0.01
: junior high school			−0.04
: senior high school			−0.04
: junior college and above			0.01
Income (reference category = <500 Yuan): 500–1000 Yuan			0.07
: >1000 Yuan			0.09+
Self-evaluation on health status			0.09*
df	619	619	618
Adjusted R^2	0.001	0.046	0.066
F	1.27	6.96***	4.11***

+$P<0.1$; *$P<0.05$; **$P<0.01$; ***$P<0.001$.

Discussion and conclusions

Until now, while some studies have addressed masturbation behavior in urban China [26,28], research on masturbation in rural areas is almost non-existent, particularly with regard to the "male marriage squeeze" phenomenon. In fact the existing research on male masturbation has been largely conducted in large and medium-sized cities in the well-developed areas of Eastern China, with a focus on university students or ordinary people [12,25,29–31]. Therefore, conducting a study on masturbation behavior in rural China within the context of a deficit of females will, no doubt, enrich knowledge on sexuality from a sociological perspective.

First, while male bachelors have a much lower experience of partnered-sex than the married man, the prevalence of masturbation among them is not significantly greater than that among the married. Also, it is noteworthy that the prevalence of masturbation among both the bachelors and married men in this study was much lower than that found in Kinsey's study or in other studies from Western countries, or in some studies conducted among Chinese college students [16,18,20,22], but it was a little bit higher than the

prevalence found in Pan Suiming's study in ordinary Chinese people [21]. However, the frequency of masturbation appears to be significantly higher in bachelors compared to married men, but they have sexual intercourse much less frequently. This suggests that the female shortage on the marriage market did not increase the prevalence of masturbation in JC County, but was likely to increase the frequency of masturbation among those male bachelors who had reported at least one masturbation event.

Furthermore, as suggested by the comparison analysis, married men hold more acceptable attitudes towards masturbation. One possible explanation for this is that married men in rural China have more channels for obtaining knowledge on reproductive health including masturbation, as they are often included as target groups in any relevant projects on family planning and reproductive health conducted by the local government [32].

Despite the absence of any significant difference in age distribution between unmarried and married men, suggesting good comparability between the two groups, the results indicated that self-evaluation on health status was significantly worse for the unmarried men. The perception of better health status

among married men may be partly attributed to their higher income, which allows them better access to health services, but it may also be due to the possibility that, being married, they enjoy a better diet and a healthier lifestyle and, therefore, objectively better health, as has been seen in other societies around the world [33].

Moreover, it appears from Model 1 that the prevalence of sexual experience had a positive effect on predicting the prevalence of masturbation but a very low interpretative power. Models 2 and 3 indicated that "monthly income" had a positive effect on the three "attitudes toward masturbation" variables, with a high interpretative power. Marital status also explained the "attitudes" scores to some extent but with a negative effect, indicating that the marriage-squeeze is likely to increase the prevalence of masturbation among unmarried men who have an attitude of acceptance toward it. The results also indicated that men who were more accepting of masturbation would be more likely to masturbate.

Models 4–6 showed a similar pattern regarding frequency of masturbation. No matter whether the control variables were included in the models or not, two out of the three "attitudes toward masturbation" variables, as well as "monthly income", have a significant positive effect on the frequency of masturbation, but with very low interpretative power. "Marital status" also had a significantly negative effect. According to existing research, low adjusted R^2 values might suggest a scattered distribution of the data [34] – as previously indicated in this study, the average value for the frequency of masturbation was only 0.70, but the standard deviation = 1.58. Another viewpoint on this issue is that the improvement in adjusted R^2 is more meaningful than the adjusted R^2 itself [35]: the adjusted R^2 was improved from 0.001 to 0.046 and 0.066, suggesting that the newly added variables, including two of the three "attitudes toward masturbation" variables, as well as "marital status" and "monthly income", had important effects on the frequency of masturbation. Therefore, the results suggest firstly, that the male marriage-squeeze will increase the frequency of masturbation among those unmarried men with an attitude of acceptance toward masturbation and, secondly, that these men are more likely to masturbate more frequently.

From the discussion above, one conclusion that might be drawn is that masturbation can, to some extent, play a "complementary" role, if marital status is not taken into account, those men who have had sexual intercourse being more likely to practice masturbation. However, when marital status is considered, the "complementary" role vanishes and is replaced by a "compensatory" role, with those unmarried men who have an attitude of acceptance toward masturbation being more likely to practice it and to masturbate more frequently. This suggests that, in the context of the male marriage-squeeze, masturbation truly acts as a compensation for the lack of partnered-sex among those male bachelors who have a more accepting attitude toward masturbation, even if their frequency of masturbation remains rather low on average. Therefore, it is important to provide these men with the correct knowledge of their body, in order for them to feel more comfortable with the practice and consider it as a normal method for releasing their sexual tension.

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