

Prevalence and Associated Factors of Premature Ejaculation in the Anhui Male Population in China: Evidence-Based Unified Definition of Lifelong and Acquired Premature Ejaculation



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ABSTRACT

Introduction: In 2014, new evidence-based definitions of lifelong premature ejaculation (LPE) and acquired premature ejaculation (APE) were proposed by the International Society for Sexual Medicine. Based on the new PE definitions, the prevalence of and factors associated with LPE and APE have not been investigated in China.

Aim: To evaluate the prevalence of and factors associated with LPE and APE in men with the complaint of PE in China.

Methods: From December 2011 to December 2015, a cross-sectional field survey was conducted in five cities in the Anhui province of China. Questionnaire data of 3,579 men were collected in our database. The questionnaire included subjects' demographic information and medical and sexual histories. Men who were not satisfied with their time to ejaculate were accepted as having the complaint of PE. Men with the complaint of PE who met the new definition of PE were diagnosed as having LPE or APE.

Main Outcome Measures: New definition of LPE and APE.

Results: Of 3,579 men who completed the questionnaire, 34.62% complained of PE. Mean age, body mass index, and self-estimated intravaginal ejaculatory latency time for all subjects were 34.97 ± 9.02 years, 23.33 ± 3.56 kg/m², and 3.09 ± 1.36 minutes, respectively. The prevalences of LPE and APE in men with the complaint of PE were 10.98% and 21.39%, respectively. LPE and APE were associated with age, body mass index, and smoking and exercise rates ($P < .001$ for all comparisons). Men with APE reported more comorbidities than men with LPE, especially in the presence of hypertension, diabetes mellitus, and heart disease ($P < .001$ for all comparisons).

Conclusion: In this study, the prevalences of LPE and APE in men with the complaint of PE were 10.98% and 21.39%, respectively. Patients with APE were older and more likely to smoke, had more comorbidities, and had a higher body mass index than patients with LPE. **Gao J, Peng D, Zhang X, et al. Prevalence and Associated Factors of Premature Ejaculation in the Anhui Male Population in China: Evidence-Based Unified Definition of Lifelong and Acquired Premature Ejaculation. Sex Med 2017;5:e37–e43.**

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Key Words: New Definition of Premature Ejaculation; Lifelong Premature Ejaculation; Acquired Premature Ejaculation; Prevalence; Associated Factors

INTRODUCTION

Premature ejaculation (PE) has been widely regarded as a common male sexual problem.^{1,2} During the past decade, many

studies have attempted to provide clearer guidelines for its definition and diagnosis.^{3–5} Most definitions of PE consist of three parts⁶: (i) short intravaginal ejaculatory latency time (IELT); (ii) lack of perceived self-efficacy or control about the timing of ejaculation; and (iii) personal distress and interpersonal difficulty related to ejaculatory dysfunction. However, all PE definitions in the previous edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) were not based on evidence and raised questions about the validity and reliability of this definition.³

The fifth edition of the *DSM* (DSM-5) recommends that *early ejaculation* can be used synonymously with *premature ejaculation* because the ejaculation occurs before the person wishes it. Persistence

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of “at least 6 months’ duration” and frequency of “at least in 75% of all sexual encounters” are included in the *DSM-5* diagnostic criteria for early ejaculation. A 1-minute IELT was used as a cutoff to define early ejaculation. The *DSM-5* definition of PE is based on evidence rather than authority, which also could be applied to homosexual men. However, the *DSM-5* criteria call attention to specifying all sexual disorders as lifelong or acquired. In clinics, other subtypes of PE, such as natural variable PE and premature-like ejaculatory dysfunction exist, but are not based on evidence.⁴

To help researchers develop new tools and self-reported outcome measurements for diagnosing and assessing the efficacy of treatment interventions, an evidence-based definition of lifelong PE (LPE) has been proposed by the International Society for Sexual Medicine (ISSM).⁷ They defined LPE as “a male sexual dysfunction characterized by ejaculation which always or nearly always occurs prior to or within about 1 minute of vaginal penetration, and the inability to delay ejaculation on all or nearly all vaginal penetrations, and negative personal consequences, such as distress, bother, frustration and/or the avoidance of sexual intimacy.” Based on these diagnostic criteria, a man would be diagnosed as having LPE if he experienced PE no longer than 1 minute after vaginal penetration, loss of control, and/or negative sexual consequences. However, the committee has not agreed on an evidence-based definition of acquired PE (APE).

To promote and assist further research on the prevalence of APE and develop new tools for the diagnosis and assessment of treatment outcomes and new pharmacologic and psychological treatments, the ISSM adopted a completely new evidence-based definition of PE in 2014.⁵ PE (LPE and APE) is a male sexual dysfunction characterized by (i) ejaculation that always or nearly always occurs before or within approximately 1 minute of vaginal penetration (LPE) or a clinically significant and bothersome decrease in latency time, often no longer than approximately 3 minutes (APE); (ii) the inability to delay ejaculation on all or nearly all vaginal penetrations; and (iii) negative personal consequences, such as distress, bother, frustration, and/or avoidance of sexual intimacy.

Although these new definitions of LPE and APE have provided a better perspective of the epidemiology, etiology, and treatment of PE, few studies have investigated the prevalence of and factors associated with LPE and APE, especially in China. Therefore, based on the new definition of PE, this study was designed to analyze the prevalence of and factors associated with LPE and APE in men with a complaint of PE in the Anhui province of China.

AIM

Based on the new definition of PE, we evaluated the constituent ratio and risk factors of LPE and APE in men with the complaint of PE in the Anhui province of China.

METHODS

Subjects

A non-interventional, observational, and cross-sectional field survey was conducted in the Anhui province of China from

December 2011 to December 2015. Anhui is a province of China, and five cities (Huaibei, Wangjiang, Hefei, Anqing, and Chaohu) were selected randomly to represent the northern, southern, central, western, and eastern parts of the province.

From the beginning of 2011, our research team gradually established a database for this research. Up to December 2015, completed questionnaire data from 3,579 men were saved in the database. All subjects (age range = 20–68 years) were enrolled from health examination centers, which were representative of the male population of Anhui province for the population distribution across geographic regions, urban vs rural residents, and age groups.

To be included in the study, subjects had to meet the following criteria: (i) men at least 18 years old who could comprehend and speak Chinese and (ii) men in a heterosexual, stable, and monogamous sexual relationship with the same female partner for longer than 6 months. Each subject’s medical and sexual histories were carefully evaluated by an experienced clinician. Men on medications that could affect their ejaculatory and erectile function and/or psychological status were excluded (eg, selective serotonin reuptake inhibitors and phosphodiesterase type inhibitors).

Study Design

Before study enrollment, all subjects were informed about the survey procedure. Those who participated were asked to provide written consent. Because several subjective and sensitive personal questions were included in the study, a pre-survey was given to a small sample ($n = 30$) to modify the originally designed items to ensure that the questionnaire was comprehensive and easily understood. This study was reviewed and approved by the Anhui Medical University (Hefei, Anhui, China) research subject review board.

The survey was conducted through face-to-face interviews. Eligible subjects were required to complete a verbal questionnaire that included capturing the following data: (i) demographic information (eg, age, body mass index [BMI], lifestyle, educational level, and employment status); (ii) duration of PE and medical and sexual histories; (iii) self-estimated IELT (time from the start of vaginal insertion to the start of intravaginal ejaculation); (iv) the Zung self-rating anxiety-depression scales^{8,9}; and (v) the International Index of Erectile Function–5 (IIEF-5).¹⁰ The reliability of these instruments (Zung self-rating anxiety-depression scales and IIEF-5) was assessed with the Cronbach α coefficient. The internal consistencies of the Zung self-rating anxiety-depression scales and the IIEF-5 were 0.80, 0.81, and 0.79, respectively.

Statistical Analysis

All data were analyzed using SPSS 13.0 (SPSS Inc, Chicago, IL, USA). Descriptive statistics were used to summarize the subjects’ characteristics. Data were expressed as mean \pm SD or

number (percentage) when appropriate. The χ^2 test was used to compare categorical data of demographic information and presence of all comorbidities. The independent t-test was used to compare numerical data of demographic information. Multiple logistic regression analysis was used to evaluate the factors associated with LPE and APE. Odds ratios and 95% CIs were calculated to examine the strength of association. For all tests, a *P* value less than 0.05 was considered statistically significant.

MAIN OUTCOME MEASURES

Men who were dissatisfied with their time to ejaculation were considered as having the complaint of PE. Furthermore, men with the complaint of PE who met the new definition of PE were diagnosed as having LPE or APE.

RESULTS

Demographic Information

Of 4,320 men who met the inclusion criteria, 3,579 men completed the survey (response rate = 82.85%). Mean age, BMI, and self-estimated IELT for all subjects were 34.97 ± 9.02 years (range = 20–60), 23.33 ± 3.56 kg/m² (range = 19–27), and 3.09 ± 1.36 minutes (range = 1–5), respectively. In addition, 34.62% of men (1,239 of 3,579) complained of PE. According to the new definition of PE, the prevalences of LPE and APE in men with the complaint of PE were 10.98% (136 of 1,239) and 21.39% (265 of 1,239), respectively. The mean age and self-estimated IELT for LPE were 38.15 ± 9.21 years (range = 20–60) and 0.72 ± 0.25 minutes (range = 0–1), respectively. However, the mean age and self-estimated IELT for APE were 45.72 ± 12.82 years (range = 20–60) and 1.78 ± 1.14 minutes (range = 0–3), respectively. Detailed demographic characteristics for all subjects are presented in [Table 1](#).

Factors Associated With PE Complaint, LPE and APE

As presented in [Table 1](#), significant differences were observed in men with vs without the complaint of PE for mean age (*P* < .001), BMI (*P* < .001), self-estimated IELT (*P* < .001), lifestyle (smoking, *P* < .001; exercise, *P* < .001), and the presence of all comorbidities (except varicocele; *P* < .001 for all comparisons). No significant differences among subgroups were found with for the duration of the relationship (*P* = .52), monthly income (*P* = .64), education level (*P* = .77), occupational status (*P* = .86), and presence of varicocele (*P* = .62).

Similarly, there were significant differences between LPE and APE for factors associated with the complaint of PE ([Table 1](#)). Compared with men with the complaint of PE who were diagnosed with LPE, men with APE presented a significantly older age, higher BMI, higher smoking rate, and presence of all comorbidities (except varicocele; *P* < .001 for all comparisons), whereas they reported a shorter self-estimated IELT (*P* < .001) and lower exercise rate (*P* < .001).

Factors Associated With LPE and APE by Multiple Logistic Regression

As presented in [Table 2](#), multiple logistic regression analysis showed factors associated with LPE and APE. LPE in the PE complaint group was associated with age (≥ 37 years), BMI (≥ 25 kg/m²), smoking and exercise, and presence of more comorbidities (except hypertension, diabetes mellitus, heart disease and varicocele; *P* < .001 for all comparisons). Similarly, there were a significant association between APE and factors associated with LPE (*P* < .001 for all comparisons). Moreover, hypertension, diabetes mellitus, and heart disease were associated with APE (*P* < .001 for all comparisons).

DISCUSSION

Based on the unified evidence-based definition of LPE and APE, we evaluated the prevalence of and factors associated with PE in men with the complaint of PE in the Anhui province of China. Results from our study showed that the prevalence of the complaint of PE in all subjects was 34.62%. Based on the new definition of PE, approximately 10.98% and 21.39% of men with the complaint of PE were diagnosed as LPE and APE, respectively. LPE and APE were associated with an age of at least 37 years, a BMI of at least 25 kg/m², smoking, and exercise. Men with APE reported more comorbidities than men with LPE, especially in the presence of hypertension, diabetes mellitus, and heart disease.

During the past decade, many studies have attempted to provide clearer guidelines for the definition and diagnosis of PE.^{3,4,11} Although PE is a common male sexual dysfunction, the real prevalence of PE has been poorly understood for lack of a universally accepted definition. For instance, the definition of PE in the third edition of the DSM includes the criterion of control but without a criterion for ejaculation time, whereas the converse is true in the fourth text revised edition of the DSM.^{3,12} In 2008, after the new evidence-based definition of LPE was proposed by the ISSM,⁷ many studies on the prevalence of and factors associated with LPE were conducted.^{13–15} However, epidemiologic studies on APE were rare because of a lack of evidence-based definitions. In 2014, the ISSM proposed the definition of APE, and 3 minutes was identified as a valid IELT cutoff for APE diagnosis.⁵ Compared with the previous definition of APE, the new evidence-based definition limits IELT to 3 minutes. According to the previous definition of APE, patients whose IELT decreased from 10 to 4 minutes in epidemiologic studies would be classified as having APE, but according to the new definition of APE, those patients would be classified as having premature-like ejaculatory dysfunction or natural variable PE. The new evidence-based definition of PE (LPE and APE) has played an important role in the epidemiology, diagnosis, and treatment of PE.

Data from our study showed that the prevalences of LPE and APE in men with the complaint of PE were 10.98% and 21.39%, respectively. APE in the PE complaint group was more

Table 1. Demographic characteristics and presence of comorbidities in all subjects

Factors	All (N = 3,579)	With PE complaint (n = 1,239)	Without PE complaint (n = 2,340)	P value*	LPE (n = 136)	APE (n = 265)	P value†
Age (y), mean ± SD	34.97 ± 9.02	37.43 ± 8.98	33.67 ± 9.05	<.001	38.15 ± 9.21	45.72 ± 12.82	<.001
BMI (kg/m ²), mean ± SD	23.33 ± 3.56	24.82 ± 4.06	22.54 ± 3.12	<.001	22.75 ± 3.82	25.54 ± 4.03	<.001
Duration of relationship (y), mean ± SD	10.15 ± 5.54	10.03 ± 5.22	10.21 ± 5.83	.52	9.84 ± 5.14	10.16 ± 5.42	.48
Self-estimated IELT (min), mean ± SD	3.09 ± 1.36	2.47 ± 1.15	3.42 ± 1.72	<.001	0.72 ± 0.25	1.78 ± 1.14	<.001
Monthly income (RMB), mean ± SD	1,609.15 ± 255.46	1,617.29 ± 252.17	1,605.41 ± 261.78	.64	1,602.73 ± 256.25	1,625.22 ± 282.72	.66
Lifestyle, n (%)							
Smoking	1,684 (47.05)	686 (55.37)	998 (42.65)	<.001	74 (54.41)	186 (70.19)	<.001
Exercise	1,541 (43.06)	421 (33.98)	1,120 (47.86)	<.001	50 (36.76)	76 (28.68)	<.001
Educational status, n (%)							
Illiterate and literate	284 (7.94)	92 (7.43)	192 (8.21)	.77	9 (6.62)	19 (7.17)	.38
Primary education	463 (12.94)	155 (12.51)	308 (13.16)		23 (16.91)	30 (11.32)	
High school	1,285 (35.90)	452 (36.48)	833 (35.60)		45 (33.09)	104 (39.25)	
Higher education	1,547 (43.22)	540 (43.58)	1,007 (43.03)		59 (43.38)	112 (42.26)	
Occupational status, n (%)							
Student	926 (25.87)	315 (25.42)	611 (26.11)	.86	39 (28.68)	61 (23.01)	.53
Unemployed	565 (15.79)	195 (15.74)	370 (15.81)		22 (16.18)	42 (15.85)	
Employed	1,177 (32.89)	403 (32.53)	774 (33.08)		37 (27.21)	88 (33.21)	
Retired	911 (25.45)	326 (26.31)	585 (25.00)		38 (27.94)	74 (27.92)	
Residence, n (%)							
Urban	1,982 (55.38)	675 (54.48)	1,307 (55.85)	.43	75 (55.15)	151 (56.98)	.73
Rural	1,597 (44.62)	564 (45.52)	1,033 (44.15)		61 (44.85)	114 (43.02)	
Comorbidities, n (%)							
Anxiety	480 (13.41)	240 (19.37)	240 (10.26)	<.001	34 (25.00)	95 (35.85)	<.001
Depression	175 (4.89)	102 (8.23)	73 (3.12)	<.001	14 (10.29)	38 (14.34)	<.001
Sexual desire disorder	582 (16.26)	249 (20.10)	333 (14.23)	<.001	32 (23.53)	101 (38.11)	<.001
Hypertension	348 (9.72)	182 (14.69)	166 (7.09)	<.001	20 (14.71)	48 (18.11)	<.001
Diabetes mellitus	129 (3.60)	76 (6.13)	53 (2.26)	<.001	9 (6.62)	39 (14.72)	<.001
Heart disease	76 (2.12)	50 (4.04)	26 (1.11)	<.001	5 (3.68)	11 (4.15)	<.001
Varicocele	463 (12.94)	165 (13.32)	298 (12.74)	.62	18 (13.24)	36 (13.58)	.92
Chronic prostatitis	1,091 (30.48)	441 (35.59)	650 (27.78)	<.001	51 (37.50)	183 (69.06)	<.001
Erectile dysfunction	628 (17.55)	316 (25.50)	312 (13.33)	<.001	41 (30.15)	107 (40.38)	<.001

APE = acquired premature ejaculation; BMI = body mass index; IELT = intravaginal ejaculatory latency time; LPE = lifelong premature ejaculation; PE = premature ejaculation; RMB = renminbi.

*Difference between PE complaint and no PE complaint was assessed by χ^2 test or t-test, as appropriate.

†Difference between LPE and APE was assessed by χ^2 test or t-test, as appropriate.

Table 2. Associated factors shown by multiple logistic regression for LPE and APE in men with the complaint of PE*

Associated factors	LPE			APE		
	P value	OR	95% CI	P value	OR	95% CI
Age \geq 37 y	<.001	1.35	1.17–2.84	<.001	2.02	1.86–3.47
BMI \geq 25 kg/m ²	<.001	1.16	1.02–1.94	<.001	1.89	1.68–2.54
Lifestyle						
Smoking	<.001	1.47	1.12–2.25	<.001	2.15	1.94–3.08
Exercise	<.001	1.28	1.08–2.04	<.001	1.55	1.33–2.34
Comorbidities						
Anxiety	<.001	1.54	1.33–3.36	<.001	2.83	2.41–4.65
Depression	<.001	1.26	1.11–2.28	<.001	1.67	1.35–3.27
Sexual desire disorder	<.001	1.65	1.35–3.07	<.001	2.09	1.25–4.01
Hypertension	NS	NS	NS	<.001	1.33	1.20–3.15
Diabetes mellitus	NS	NS	NS	<.001	2.21	2.02–4.13
Heart disease	NS	NS	NS	<.001	1.12	1.06–2.85
Varicocele	NS	NS	NS	NS	NS	NS
Chronic prostatitis	<.001	2.25	1.98–4.12	<.001	2.88	2.26–4.49
Erectile dysfunction	<.001	2.67	2.25–4.06	<.001	3.74	2.84–5.25

APE = acquired premature ejaculation; BMI = body mass index; LPE = lifelong premature ejaculation; NS = not significant; OR = odds ratio; PE = premature ejaculation.

*Multiple logistic regression analysis was used to evaluate the associated factors of LPE and APE.

common than LPE. Similar findings were observed in our previous studies. In a study conducted in 3,016 men,¹⁶ approximately 25.80% complained of PE. The prevalences of LPE and APE (based on the new classification of PE syndromes proposed by Waldinger¹⁷) were 12.34% and 18.77%, respectively. In addition, results from another study from Turkey stated that 2.3% and 3.9% of their general population were classified as having LPE and APE, respectively.¹⁸ However, the opposite findings were observed in another study¹⁹; that is, LPE (35.66%) in outpatients with complaints of PE was more common than APE (28.07%; based on the new classification of PE syndromes proposed by Waldinger¹⁷). This difference in prevalence order and rate might be explained by the different definitions of PE. Moreover, cultural and religious differences between the Chinese and Western patient populations require consideration.

PE has been associated with many factors, such as age, psychological factors (eg, anxiety and depression), chronic prostatitis, and erectile dysfunction (ED).^{20–25} Previous studies have associated PE with age.^{16,26,27} In addition, a cross-sectional study conducted in Korea showed that men with PE had various psychological problems, including depression, low self-esteem, bother, and low sexual satisfaction. Self-assessed PE was significantly associated with depression.²² After evaluating a consecutive series of 244 men with couple infertility, Lotti et al²⁴ found that PE was positively associated with prostatitis symptoms. The Premature Ejaculation Diagnostic Tool score was related to the total and subdomain scores of the National Institutes of Health Chronic Prostatitis Symptom Index. Our study confirmed these findings. We found that LPE and APE were associated with age, BMI, smoking, exercise, and the presence of comorbidities.

However, men with APE were older and more likely to smoke, had more comorbidities, and had a higher BMI. In particular, according to logistic regression, some comorbidities (eg, hypertension and heart disease) were associated only with APE. Furthermore, heart and endocrine diseases have been associated with ED,^{28–30} and ED has been correlated with PE,^{31,32} so we speculated that ED might contribute to the etiology of APE in men with hypertension, diabetes mellitus, and/or heart disease. Further in-depth studies are needed.

Several limitations of the present study should be mentioned. First, in addition to LPE and APE, two other PE subtypes (variable PE and subjective PE) have been proposed by Waldinger.^{4,17} However, we did not evaluate these subtypes in this study. Second, some people are illiterate, and face-to-face interviews were used in this study. However, respondents might have felt obliged to give socially acceptable answers when some private, sensitive, and subjective questions were raised. Further in-depth studies with other methods (eg, internet-based surveys) are needed. Third, IELT was measured with a stopwatch. Fourth, because approximately 26.74% of men discontinued the study, potential sampling bias should be considered in the study. Fifth, in the questionnaire, we simply asked whether subjects take exercise and did not note the mode of exercise or exercise intensity. In a future planned study, we will capture exercise details. Sixth, we did not use the Chinese version of the IIEF-5 or Zung self-rating anxiety-depression scale. Although we administered a pre-survey to modify the originally designed items to ensure that the questionnaire was comprehensive and easily understood, these could have influenced the results. Seventh, because previous studies on this issue are rare, further research is needed to confirm and extend these results.

CONCLUSION

This is the first population-based study to evaluate the prevalence of and factors associated with LPE and APE in men with the complaint of PE in the Anhui province of China. Our study found that the prevalence of the complaint of PE in all subjects was 34.62%. According to the new definition of PE, approximately 10.98% and 21.39% men with the complaint of PE were diagnosed as having LPE and APE, respectively. LPE and APE were associated with an age of at least 37 years, a BMI of at least 25 kg/m², smoking, and exercise. In addition, men with APE reported more comorbidities than men with LPE, especially in the presence of hypertension, diabetes mellitus, and heart disease. Because research focused on the new definition of LPE and APE is rare, further in-depth studies are needed.

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