

Original Article

Prevalence of premature ejaculation in young and middle-aged men in Korea: a multicenter internet-based survey from the Korean Andrological Society

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Abstract

In this study, we aimed to investigate the prevalence and perception of premature ejaculation (PE) in young and middle-aged Korean men. The study was conducted using an Internet-assisted questionnaire. A total of 2 037 Korean male adults, aged 20 years or older, were randomly sampled based on age and residency. The questionnaire developed by the PE Study Group of the Korean Andrological Society includes four categories (overall sexual function, symptoms, distress and treatment) with a total of 16 questions. For each question, symptoms were evaluated by a scale ranging from 0 to 10. Intravaginal ejaculation latency time was '5–10 min' in 38.6%, followed by 'longer than 10 min' in 29.9%, '2–5 min' in 23.6%, '1–2 min' in 5.4% and 'shorter than 1 min' in 2.5%. In our series, 27.5% of respondents reported having PE. Control over ejaculation within a recent 3-month period was 6.2 points on average. Respondent complaints of PE-related stress averaged 7.1 points and stress-related complaints from sexual partners averaged 7.1 points. The effect of PE on sexual life was 6.8 points. Of the respondents determined as having PE, 42.6% responded that they were inclined to receive treatment. Results from this study suggest that the prevalence of PE diagnosed by the respondent on his own was approximately 27.5% in young and middle-aged men in Korea. PE-related stress had a significant effect on the stress, sexual activity and quality of life of the respondent and his sexual partner.

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1 Introduction

According to results from numerous epidemiological studies, premature ejaculation (PE) is likely the most prevalent type of sexual dysfunction [1–5]. Overall, the prevalence rate of PE falls somewhere between 25% and 40% in the global population of men across all age groups [6–9]. However, past data on overall prevalence of PE have varied, owing in great part to a lack of earlier standardization of the definition of PE and of criteria for patient enrollment in epidemiological studies. Some authors have reported prevalence rates as low as 4% and as high as 75% [10–12]. The Global Study of Sexual Attitudes and Behaviors [9] is a large, survey-based study of the prevalence of common types of sexual dysfunction in 29 countries. Results from the study, which were stratified into seven geographic regions, indicated a prevalence rate of 28%. In all populations studied, rapid ejaculation was the most common complaint. Prevalence above 20% was reported in Europe, Asia and South America. In the Middle East, by comparison, only ~12.4% had this complaint.

Unfortunately, in Korea, there has been no large-scale, population-based study that uses agreed upon diagnostic criteria to examine the prevalence of PE and its influence on quality of life (QoL) for both patients and their partners. Furthermore, Korean men who desire treatment may not have information on physicians who specialize in PE. With regard to treatment, S-S cream, which contains a specific Korean herbal medicine, is a topical agent developed for use in treatment of PE [13]. In addition, glans penis augmentation has been introduced by Korean researchers as a surgical treatment [14]. However, instead of a medical consultation with a doctor, Koreans tend to use nonmedical sources, such as the mass media or the Internet, to find information on PE; therefore, patients are often misinformed. Under this circumstance, a penile dorsal nerve resection has been performed only in Korea. Despite an insufficient basis, it is widely used as a treatment for PE; however, this type of surgery is still controversial, owing to side effects that include erectile dysfunction (ED), penile curvature and penile hypersensitivity. Against this background, this large-scale epidemiological survey administered by the Korean Andrological Society (KAS) is the first to investigate recognition of PE and its prevalence in Korea.

2 Materials and methods

2.1 Period

The survey was conducted over a 10-day period, from 19 to 28 April, 2008.

2.2 Subjects

A total of 5 000 adult Korean males, aged 20 years or older, were chosen as a sample population in proportion to the population distribution of metropolitan cities and provinces, and distributed according to age. Men were excluded if they were not involved in a sexual relationship at the time of recruitment or during the previous 3 months, or if they did not plan to be in one in the near future. Subjects were randomly selected in stratified three-stage cluster samples according to the administrative district. The sampling frame was stratified to city, dong (small section of a city) and tong (subdivision of a dong) by 16 geographical regions. The study was approved by the Pusan National University Hospital Institutional Review Board, and all participants provided an informed consent.

2.3 Methods

An e-mail introduction was sent to 5 000 subjects, asking them to log into the homepage and to fill in the questionnaire.

2.4 Questionnaire

The questionnaire was divided into four categories, with a total of 16 questions, including four questions on overall sexual function, six questions on the degree of symptoms of PE, four questions on the impact of PE and two questions on inclination to seek treatment for PE. Each question was answered according to symptoms on a scale of 0–10 points. Completion of the questionnaire was relatively easy for respondents, and data were secure, objective and quantifiable. With consideration for the characteristics of the Korean population, the questionnaire used in this study was developed by the PE Study Group of the KAS, Korea's only formal sexual medicine society (Table 1).

2.5 Statistical analysis

Data collected were processed and analyzed using routine statistical methods, and a $P < 0.05$ level was taken as an indication of significant difference. Comparison of intergroup was performed using χ^2 -test or one-way analysis of variance (ANOVA) test. All statistics were calculated using SPSS version 12.0 (SPSS Inc., Chicago, IL, USA).

Table 1. Questionnaire.

Questions	Force-choice answers		
1. How would you rate your sexual desire within the last 3 months?	Very weak 0	~	Very good 10
2. How would you rate your erectile function within the last 3 months?	Very weak 0	~	Very good 10
3. How many times did you attempt sexual intercourse over the last 4 weeks?	() times / 4 weeks		
4. How satisfied were you with your sexual intercourse within the last 3 months?	Very unsatisfied 0	~	Very satisfied 10
5. How long does it usually take for you to achieve orgasm after insertion?	< 1 min, ≥1 & < 2 min, ≥ 2 & < 5 min, ≥5 & < 10 min, ≥ 10 min.		
6. How does the ejaculation time during masturbation compare with that during actual sexual intercourse?	Very shortened, shortened, unchanged, prolonged, very prolonged		
7. How would you rate your control over ejaculation within the last 3 months?	Poorest 0	~	Best 10
8. What is your degree of pain or discomfort on ejaculation within the last 3 months?	Not at all 0	~	Very serious 10
9. Do you think that you have been suffering PE?	Yes No		
10. If you have been suffering PE, when do you think it started?	Since the first intercourse, 20's, 30's, 40's, 50's		
11. What is the degree of stress you feel about your PE within the last 3 months?	Not at all 0	~	Very serious 10
12. What is the degree of stress your partner feels about your PE within the last 3 months?	Not at all 0	~	Very serious 10
13. What is the degree of impact of PE on your sexual life within the last 3 months?	Not at all 0	~	Very serious 10
14. What is the degree of impact of PE on your life?	Not at all 0	~	Very serious 10
15. How serious are you about treatment for PE?	Not at all 0	~	Very serious 10
16. What is your most preferred treatment regimen for PE?	Oral, topical, psychotherapy, behavioral therapy		

Sixteen questions have been framed for evaluation of prevalence and perception of premature ejaculation (PE). For each question, symptoms were evaluated on a scale ranging from 0 to 10.

3 Results

3.1 Subject demographics

The rate of response to the e-mail survey invitation was 40.7%; the sample of men ($n = 2\,037$; Table 2) included 576 (28.3%) men in their 20s, 609 (29.9%) men in their 30s, 618 (30.3%) men in their 40s and 234 (11.5%) men in their 50s or older (Table 2). χ^2 -tests ($P < 0.05$) showed statistically significant similarities in data for age distribution, marital status and education level of those aged 20 years or older between our study and the 2007 National Health and Nutrition Survey Report published by the Korean Ministry of Health and Welfare (data not shown). Respondents with PE were more likely to self-report several conditions (Table 3), including prostate disease (for example, benign prostate hyperplasia, prostatitis), hyperthyroidism and psychological disturbances (for example, depression, anxiety) compared with respondents without PE ($P < 0.05$ for all).

3.2 Frequency of sexual intercourse

Frequency of sexual intercourse for respondents during the previous 3 months was 5.2 ± 6.1 times on average. In comparison, according to age, frequency for subjects in their 30s was the highest, or 6.2 ± 6.7

times; for those in their 40s and 50s or older and for those in their 20s, frequency was recorded as 5.4 ± 5.6 , 4.6 ± 5.1 and 4.2 ± 6.2 times, respectively.

3.3 Sexual libido

As evaluated by respondents, the average for sexual libido during the previous 3 months was 7.3 ± 2.2 points. Subjects in their 20s showed the highest score, that is, 7.9 ± 2.2 points, and scores for those in their 30s, in their 40s and in their 50s or older, were 7.6 ± 2.1 , 7.1 ± 2.1 and 6.2 ± 2.2 points, respectively. Sexual libido decreased with increasing age ($P < 0.01$).

3.4 Erectile function

As scored by respondents, erectile function during the previous 3 months averaged 7.7 ± 2.2 points. The score for subjects in their 20s was the highest, or 8.3 ± 2.0 points, and function for those in their 30s, in their 40s and in their 50s or older was recorded as 8.0 ± 1.9 , 7.2 ± 2.1 and 6.3 ± 2.3 , respectively. Erectile function decreased with increasing age ($P < 0.01$).

3.5 Sexual satisfaction

As evaluated by respondents, sexual satisfaction during the previous 3 months was 6.9 ± 2.4 points on

Table 2. Demographic characteristics of the analyzed sample.

Classification	All respondents		Respondents with PE		Respondents without PE	
	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)
Total	2 037	(100.0)	561	(100.0)	1 476	(100.0)
Age						
Twenties	576	(28.3)	135	(24.1)	441	(29.9)
Thirties	609	(29.9)	150	(26.7)	459	(31.1)
Forties	618	(30.3)	190	(33.9)	428	(29.0)
Over fifty	234	(11.5)	86	(15.3)*	148	(10.0)
Scholarship						
Middle school graduation	17	(0.8)	9	(1.6)	8	(0.6)
High school graduation	234	(11.5)	62	(11.1)	172	(11.7)
University student	242	(11.9)	60	(10.7)	182	(12.3)
University(college) graduation	1 330	(65.3)	376	(67.0)	954	(64.6)
Postgraduate school graduation	214	(10.5)	54	(9.6)	160	(10.8)
Occupation						
Agriculture/forestry/fisher	9	(0.4)	2	(4.0)	7	(0.5)
Self-employed	331	(16.3)	101	(18.0)	230	(15.6)
White color	571	(28.0)	140	(25.0)	431	(29.2)
Blue color	140	(6.9)	44	(7.8)	96	(6.5)
Government employee	139	(6.8)	47	(8.4)	92	(6.2)
Specialist	393	(19.3)	108	(19.3)	285	(19.3)
Student	261	(12.8)	59	(10.5)	202	(13.7)
Unemployed	90	(4.4)	31	(5.5)	59	(4.0)
Others	103	(5.1)	29	(5.2)	74	(5.0)
Marital status						
With a spouse	1 190	(58.4)	355	(63.3)*	835	(56.6)
Without a spouse	847	(41.6)	206	(36.7)*	641	(43.4)
Earning						
High	23	(1.1)	11	(2.0)	12	(0.8)
Middle-high	228	(11.2)	66	(11.8)	162	(11.0)
Middle	1 034	(50.8)	257	(45.8)	777	(52.6)
Low-middle	600	(29.4)	188	(33.5)	412	(27.9)
Low	152	(7.5)	39	(7.0)	113	(7.7)

Abbreviation: PE, premature ejaculation. * $P < 0.05$, compared with respondents without PE.

average. Subjects in their 30s recorded the highest point, or 7.2 ± 2.3 points, and those in their 40s, in their 20s and in their 50s or older showed 6.9 ± 2.1 , 6.9 ± 2.6 and 6.5 ± 2.5 points, respectively.

3.6 Control over ejaculation

Self-evaluated control over ejaculation during the previous 3 months was recorded as 6.2 ± 2.2 points, and control for respondents in their 20s, 30s, 40s and 50s or older was scored as 6.3 ± 2.3 , 6.3 ± 2.2 , 6.1 ± 2.1 and 5.6 ± 2.5 points, respectively (Figure 1A).

3.7 Intravaginal ejaculatory latency time (IELT)

IELT for the largest portion of total subjects (38.6%) was 5–10 min; 29.9%, 23.6%, 5.4% and 2.5% showed IELT of > 10 min, 2–5 min, 1–2 min and < 1 min, respectively (Figure 2A). Subjects with IELT of < 1 min, < 2 min, < 5 min and < 10 min were 2.5%, 7.9%, 31.5% and 70.1%, respectively (Figure 2B).

3.7.1 IELT and control over ejaculation

Control over ejaculation for IELT of < 1 min, 1–2 min, 2–5 min, 5–10 min and > 10 min was recorded as 3.1 , 3.6 ± 2.0 , 5.1 ± 2.3 , 6.2 ± 2.6 and 7.7 ± 2.7 points, respectively. Longer IELT was associated with higher self-evaluated control over ejaculation ($P < 0.01$, Figure 1B).



Table 3. Percentages of men reporting comorbid conditions.

Condition	All respondents		Respondents with PE		Respondents without PE	
	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)
Total	2 037	(100)	561	(100)	1 476	(100)
Hypertension	108	(5.3)	47	(8.4)*	61	(4.1)
Diabetes	50	(2.5)	18	(3.2)	32	(2.2)
Benign prostate hyperplasia	61	(3.0)	27	(4.8)*	34	(2.3)
Prostatitis (chronic)	62	(3.0)	27	(4.8)*	35	(2.4)
Hyperthyroidism	11	(0.5)	9	(1.6)*	2	(0.1)
Depression	16	(0.8)	11	(2.0)*	5	(0.3)
Anxiety	14	(0.7)	9	(1.6)*	5	(0.3)
Hepatic disease	20	(1.0)	6	(1.1)	14	(0.9)
Cardiovascular disease	26	(1.3)	11	(2.0)	15	(1.0)
Hyperlipidemia	43	(2.1)	13	(2.3)	30	(2.0)
Neurological disease	18	(0.9)	8	(1.4)	10	(0.7)
Musculoskeletal disorders	13	(0.6)	5	(0.9)	8	(0.5)

Abbreviation: PE, premature ejaculation. $P < 0.05$, compared with respondents without PE.

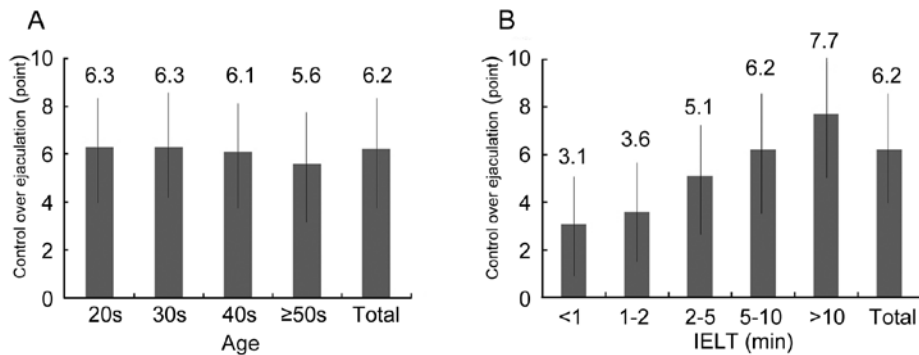


Figure 1. Control over ejaculation. IELT, intravaginal ejaculatory latency time.

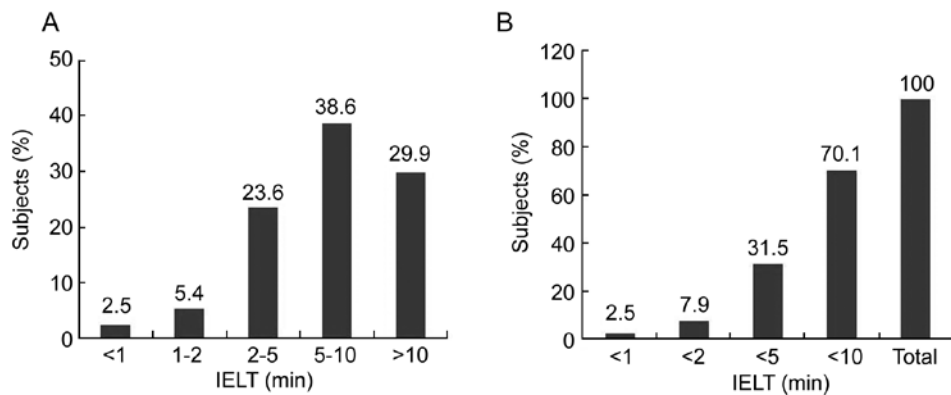


Figure 2. Intravaginal ejaculatory latency time (IELT).

3.7.2 IELT and sexual libido

Sexual libido of subjects with IELT of < 1 min, 1–2 min, 2–5 min, 5–10 min and > 10 min scored 5.5 ± 2.0 , 6.4 ± 1.9 , 6.8 ± 2.3 , 7.3 ± 2.2 and 8.2 ± 2.4 , respectively. Self-evaluated sexual libido increased with longer IELT ($P < 0.01$).

3.7.3 IELT and erectile function

Erectile function of respondents with IELT of < 1 min, 1–2 min, 2–5 min, 5–10 min and > 10 min was 5.4 ± 2.0 , 6.3 ± 2.2 , 6.9 ± 2.0 , 7.7 ± 1.6 and 8.7 ± 2.1 , respectively. The score for self-evaluated erectile function was higher when IELT was longer ($P < 0.01$).

3.7.4 IELT and sexual satisfaction

Sexual satisfaction of subjects with IELT of < 1 min, 1–2 min, 2–5 min, 5–10 min, and > 10 min was recorded at 3.3 ± 1.1 , 5.0 ± 1.5 , 6.2 ± 1.7 , 7.1 ± 2.1 and 7.9 ± 2.2 points, respectively. Respondents with longer IELT showed higher self-evaluated sexual satisfaction ($P < 0.01$).

3.7.5 IELT and frequency of sexual intercourse

Percentages for frequency of sexual intercourse of < 1 time, 1–4 times, 5–9 times, 10–14 times and 15 or more times per month were 44%, 50%, 4%, 2% and 0%, respectively, among respondents with IELT of < 1 min; 22.0%, 56.0%, 14.7%, 3.7% and 3.7%, respectively, among those with IELT of 1–2 min; 14.0%, 49.8%, 23.5%, 9.6% and 3.1%, respectively, among those with IELT of 2–5 min; 10%, 46.7%, 27.3%, 10.7% and 5.3%, respectively, among those with IELT of 5–10 min; and 9.0%, 35.6%, 27.0%, 16.9% and 11.5%, respectively, among those with IELT of > 10 min. The monthly average frequency of sexual intercourse tended to be higher when IELT was longer ($P < 0.01$).

3.8 Ejaculation time during masturbation

In a comparison between sexual intercourse and masturbation, 48.1%, 28.9% and 23.0% of subjects answered that ejaculation time during masturbation was shortened, unchanged and prolonged, respectively, compared with time during sexual intercourse. Overall, ejaculation time was shorter during masturbation than during sexual intercourse.

3.9 Pain or discomfort on ejaculation

Pain or discomfort on ejaculation during the previous 3 months scored 3.1 ± 2.3 points. The score for subjects in their 40s was the highest, at 3.2 ± 2.1 points, and that of respondents in their 20s, in their 30s and in their 50s or older was 3.1 ± 2.4 , 3.1 ± 2.1 and 2.8 ± 2.1 points, respectively.

3.10 Prevalence of PE based on self-evaluation

Of the total respondents, 27.5% responded that they had PE. The percentage of subjects in their 50s or older with self-diagnosed PE was the highest (36.8%), and those of respondents in their 40s, 30s and 20s were 30.7%, 24.6% and 23.4%, respectively (Figure 3A).

3.10.1 IELT and self-diagnosis of PE

A correlation was observed between IELT and self-diagnosis of PE; 52.9% of subjects with IELT of < 1 min, 68.8% of those with IELT of < 1–2 min, 47.7% of those with IELT of 2–5 min, 22.6% of those with IELT of 5–10 min and 8.5% of those with IELT of > 10 min diagnosed PE on their own (Figure 3B).

3.10.2 Control over ejaculation and self-diagnosis of PE

Average control over ejaculation in subjects with self-diagnosed PE and other respondents was significantly different at 4.7 ± 1.6 and 6.8 ± 1.7 points, respectively.

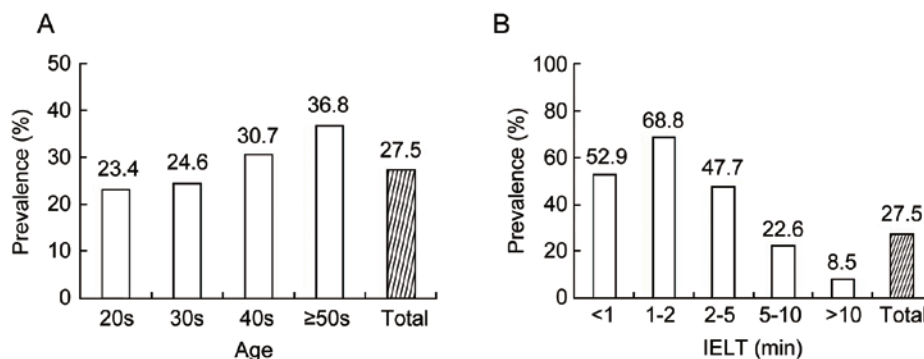


Figure 3. Self-diagnosis of premature ejaculation. IELT, intravaginal ejaculatory latency time.



3.10.3 Sexual libido and self-diagnosis of PE

Average sexual libido in subjects with self-diagnosed PE and other respondents was significantly different at 6.9 ± 2.6 and 7.5 ± 2.7 points, respectively.

3.10.4 Erectile function and self-diagnosis of PE

Average erectile function in subjects with self-diagnosed PE and other respondents was significantly different at 7.0 ± 1.9 and 7.9 ± 2.2 points, respectively.

3.10.5 Pain or discomfort on ejaculation and self-diagnosis of PE

Averages for pain or discomfort on ejaculation for respondents with self-diagnosed PE for other respondents were significantly different at 3.5 ± 1.7 and 3.0 ± 1.8 , respectively.

3.11 Time of onset of PE

For time of onset of PE, the largest number of subjects (28.3%) first experienced PE in their 20s; percentages of those having it first 30s, 'since the first sexual intercourse', 40s and those 50s or older were 26.2%, 24.4%, 16.8% and 4.3%, respectively.

3.12 Stress due to PE

Average score for stress felt by respondents because of PE during the previous 3 months was 7.1 ± 2.2 points. Subjects in their 20s showed the highest score, 7.3 ± 2.3 points, and those in their 30s, 40s and 50s or older scored 7.2 ± 2.2 , 7.0 ± 2.0 and 6.9 ± 2.3 points, respectively. When scores for stress were compared according to IELT, scores from subjects with IELT of < 1 min, 1–2 min, 2–5 min, 5–10 min and > 10 min were 9.0 ± 2.1 , 7.8 ± 2.1 , 7.0 ± 1.9 , 6.9 ± 1.7 and 6.9 ± 2.0 , respectively; shorter IELT was associated with more stress ($P < 0.01$).

3.13 Partner stress due to PE

Partner stress was 6.5 ± 2.2 points on average. Stress of partners of subjects in their 50s or older was the highest (6.6 ± 2.4 points) and that of respondents in their 40s, in their 30s and 20s was 6.5 ± 2.0 , 6.4 ± 2.1 and 6.3 ± 2.3 points, respectively. Overall, partners of older subjects felt more stress. In a comparison of partner stress according to IELT, stress in partners of respondents with IELT of < 1 min, 1–2 min, 2–5 min, 5–10 min and > 10 min was recorded as 7.1 ± 2.1 , 7.0 ± 2.0 , 6.3 ± 1.9 , 6.4 ± 2.1 and 6.4 ± 2.2 , respectively, and there was no significant difference according to IELT.

3.14 Impact of PE on sexual life

The score for impact of PE on sexual life during the previous 3 months was 6.9 ± 2.1 points. Subjects in their 20s recorded the highest level, (7.0 ± 2.1 points), and those in their 30s, 40s and in their 50s or older showed 6.9 ± 2.1 , 6.8 ± 1.9 and 6.8 ± 1.8 points, respectively; hence, scores also were relatively high regardless of age.

3.15 Impact of PE on quality of life

Impact of PE on quality of life during the previous 3 months was 7.0 ± 2.1 points. When impact was compared according to age, the score for respondents in their 20s was the highest, (7.4 ± 2.1 points), and that of subjects in their 30s, in their 40s and 50s or older was 6.9 ± 1.8 , 7.0 ± 2.3 and 6.9 ± 2.0 points, respectively; scores were also relatively high regardless of age.

3.16 Inclination to seek treatment for PE

Of respondents who answered that they had PE, 42.6% were inclined to seek treatment. In comparison, according to age, 49.6% of subjects in their 20s, 43.3% of those in their 30s, 41.0% of those in their 40s and 33.7% of those in their 50s or older, showed an inclination to seek treatment; hence, younger respondents had a stronger inclination. When compared according to IELT, 62.9% of subjects with IELT of < 1 min, 56.0% of those with IELT of 1–2 min, 39.3% of those with IELT of 2–5 min, 35.4% of those with IELT of 5–10 min and 51.9% of those with IELT of > 10 min responded that they were inclined to seek treatment. In particular, even subjects with IELT of > 10 min showed a strong inclination to seek treatment.

3.17 Choice of treatment for PE

Behavioral therapy was the treatment preferred by the largest number of subjects with self-diagnosed PE (35.5%), particularly those in their 20s, followed by oral agents, psychotherapy and topical agents, which were chosen by 32.4%, 18.9% and 13.2% of subjects, respectively. Oral agents and topical agents were preferred by respondents in their 50s or more, and psychotherapy was chosen by those in their 40s and those in their 20s.

4 Discussion

Diagnosis of PE for clinical trial purposes has typically relied on IELT for entry; however, this

parameter does not capture the multidimensional nature of PE. Therefore, there has been a need for development of a brief, multidimensional, psychometrically validated instrument for diagnosis of PE status. The Premature Ejaculation Diagnostic Tool (PEDT) was introduced in 2007; validation in various languages is in progress [15]. To date, the PEDT has not yet been validated in Korea. Thus, the questionnaire used in this study was invented by the PE Study Group of KAS, with consideration for characteristics of the Korean population. It includes a total of 16 questions in four categories—overall sexual function, degree of PE symptoms, impact and treatment of PE. We also made an effort to include all components of PEDT in the questionnaire used in this study. As the questionnaire was filled in by the respondents themselves, it was designed so that responses ranged from 0 to 10 points, according to symptoms, in order to improve objectivity and to quantify results.

Subjects in this study with IELT of < 1 min, < 2 min and < 5 min were 2.5%, 7.9% and 31.5% of total respondents, respectively. There was no significant difference according to age. Although data on prevalence of PE according to age are limited, there is a widespread belief that prevalence of PE decreases with age. However, in the National Health and Social Life Survey (NHSLs), the response of men to the question regarding ejaculating too rapidly did not differ across the analyzed age categories [8]. In contrast to IELT, the prevalence of respondents who diagnosed themselves as having PE increased with age in this study. The reason for this is thought to be that younger subjects in their 20s and 30s had better control over ejaculation than subjects in their 50s or older. According to a study of 110 primary PE patients in Germany, IELT of 90% of the subjects was < 60s [16], and a current large-scale survey conducted in the United States with 1 587 subjects [17] reported that normal males showed IELT of 7.3 min on average and PE patients had IELT of 1.8 min. The most current report from the International Society for Sexual Medicine (ISSM) established IELT of < 1 min as a criterion for PE [18]. However, determination of an IELT cutoff time for diagnosis of PE is still controversial. Through hospital-operated homepages, many urologists in Korea suggest an IELT of < 5 min. In this study, the percentage of IELT of < 5 min (31.5%) was most similar to that of subjects who diagnosed PE on their own (27.5%). Considering that only 13% of respondents with IELT of > 5 min thought

that they had PE, a tentative criterion of IELT felt by Koreans was considered to be 5 min.

This study found that longer IELT was associated with a high level of sexual libido, erectile function, sexual satisfaction and frequency of sexual intercourse. This result is believed to be associated with increased sexual confidence owing to longer IELT, which thereby induces an increase in sexual activity. In addition, we found that respondents with self-diagnosed PE showed low scores for sexual libido, erectile function and sexual satisfaction. Similar to results from the present study, El-Sakka [19] reported that PE and low desire, slightly or in combination, were significantly associated with severe, rather than, mild ED. This could be the result of a performance anxiety-related problem, rather than physical distress or side effects of medication administered for treatment of ED. This association could support the hypothesis that phosphodiesterase type 5 inhibitors could be effective in patients with PE through reduction of performance anxiety, maintenance of erection and increasing IELT [20].

Control over ejaculation is thought to be an important factor in diagnosis of PE, along with IELT. IELT has also been significantly associated with control over ejaculation. In this study, the rate of respondents who diagnosed PE on their own increased with age, and younger subjects in their 20s and 30s had better control than subjects in their 50s or older. Moreover, rates for respondents who diagnosed themselves as having PE with IELT of < 2 min were high; however, it is interesting to note that 8.5% of subjects with of > 10 min also answered that they have PE. This result suggested that even respondents with a normal IELT would diagnose themselves as having PE if they thought that they had poor control over ejaculation, and that control over ejaculation, rather than objective IELT criteria, would be a matter of greater concern to subjects. In other words, while IELT is a representative and objective criterion for diagnosis of PE, control over ejaculation felt by a patient is mostly a subjective criterion, as is patient's reported outcome (PRO). A current multicenter study performed with 1 587 subjects [17] also reported that median IELT for men with PE was 1.8 min, in comparison with 7.3 min for men in the non-PE group. However, the study found considerable overlap in IELT between the two groups, which highlights the importance of using additional PRO measures for the diagnosis of PE.

The highest score for stress in respondents was 8.0



points in those with IELT of < 1 min; longer IELT led to reduced stress. Partner stress was also the highest (7.1 points) in subjects with IELT of < 1 min; longer IELT was followed by less stress. Score for PE-related stress felt by respondents and their partners during the previous 3 months was relatively high at 7.1 and 6.5 points, respectively, regardless of age. Although the impact of PE on sexual life was not significantly different, its score was highest in subjects in their 20s, by a recording of 7.0 points, and impact of PE on QoL was also observed to be highest in respondents in their 20s, by a recording of 7.4 points. These results showed that younger, self-diagnosed PE patients would be more affected by this disorder.

Our results revealed that, although most of the patients are young and have no problems associated with erection, the frequency of sexual intercourse is low. This finding can be explained by the relatively low rate of respondents with spouses (58.4%). Korean men with no spouse are likely to have no fixed sexual partners.

When respondents with self-diagnosed PE were asked about their interest in treatment, subjects in their 20s recorded the highest percentage of interest, 49.6%, and older respondents showed less inclination. In particular, percentages for subjects with an inclination to seek treatment among those with IELT of < 1 min and 1–2 min were high, that is, 62.9% and 56%, respectively; and 51.9% of respondents with IELT of > 10 min also answered that they would be inclined to seek treatment. The reason for this is believed to be that subjects with self-diagnosed PE recognized the necessity of treatment because of their own feelings about control over ejaculation, rather than objective IELT.

Some limitations of the present study should be noted. First, we did not use an internationally validated questionnaire such as PEDT or the International Index of Erectile Function (IIEF)-5. Therefore, comparison of some data from this study to other published PE studies using validated questionnaires has been difficult. Second, because IELT in this study was dependent on respondent's memory only, we should address the fact that recall bias may influence subject reporting of IELT. Third, although the internet environment in Korea has been well popularized, more of those who use the internet frequently and register for participation in internet surveys come from the younger population rather than the older population; therefore, the response rate was relatively low, particularly in men above

the age of 50 years. However, this level of response is not unexpected for an e-mail survey request when considering the response rate of an internet-based survey, which was reported by Porst *et al.* [21]. Moreover, a recent study compared response rates of surgeons to a questionnaire sent through e-mail or standard mail and reported a significantly lower response rate with e-mail solicitation [22]. However, the low response rate may indicate a bias toward respondents who are comfortable discussing sexual matters or who believe on their own that they have PE. Fourth, this internet-based study evaluated individuals who contacted our website after receiving an e-mail, and no face to face interaction occurred between the respondent and the interviewer. Therefore, it is possible that respondents could be misinformed in some cases. We attempted to design a simple questionnaire that was easy to understand for both young and middle-aged patients; in addition, we pretested the questionnaire several times; still, this is a potential limitation.

In conclusion, the proportion of respondents whose IELT was < 2 min was 7.9%. However, the prevalence of PE diagnosed by respondents on their own was approximately 27.5%. PE-related stress had a significant effect on the stress of respondents and their sexual partners, sexual activity and QoL. It is probable that these data are applicable to Korea nationwide. This is the first epidemiological study administered by the KAS, and represents a first step in providing help to Korean physicians and others in their identification of the impact and scope of the study of PE in Korean men.

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