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Original Research

Impact of type D personality and depressive symptoms on premature ejaculation in young adult males

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Abstract

Background: Premature ejaculation (PE) is one of the most common male sexual dysfunctions with prominent psychological consequences. Type D personality (TDP) is also associated with multiple psychological disorders, such as depression and anxiety. However, the correlation between PE and TDP remains unknown.
Aim: The study sought to investigate the relationships between depressive symptoms, TDP, and PE.
Methods: Adult males in Taiwan who were 20 to 40 years of age and who had sexual intercourse in the past 6 months were recruited to complete online questionnaires composed of general demographics, the Premature Ejaculation Diagnostic Tool (PEDT), 5-item International Index of Erectile Function (IIEF-5), Type D Scale-14, and Depression and Somatic Symptom Scale (DSSS). Chi-square test and independent Student's *t* test were used to compare the parameters between the TDP and non-TDP groups. Univariate and multivariate logistic regression analyses were conducted to evaluate factors related to PE.
Outcomes: Outcomes were the prevalence of PE and TDP in young Taiwanese men, the associations between depressive symptoms and PE and TDP, and the predictive factors of PE.
Results: In total, 2558 men with a mean age of 31.3 ± 5.3 years were included in the present study. Among them, 315 (12.3%) and 767 (30.1%) participants were classified as having PE and moderate-to-severe erectile dysfunction (ED), respectively. In total, 1249 (48.8%) participants met the criteria for TDP. The PEDT, IIEF-5, and DSSS, including the total scores and depression and somatic subscales, were significantly higher in men with TDP (all $P < .001$). PE prevalence was significantly greater in men with TDP than in those without TDP (16.2% vs 8.6%; $P < .001$). Most parameters, including age, moderate-to-severe ED, the Type D Scale-14 subscales, and the DSSS somatic and depressive subscales, were significantly associated with PE in the univariate analysis. Only the depressive subscale of the DSSS and moderate-to-severe ED (IIEF-5 $\leq$16) were the independent predictors of PE in the multivariate analysis.
Clinical Implications: The results suggest that it is important to consider the psychological effects of PE in young men, and the study has provided a biopsychosocial aspect to manage patients with PE.
Strengths and Limitations: This is the first study to evaluate the association between PE, TDP, and depression in a large population of young adult males. However, the cross-sectional design may have limited the investigation of causality, and selection bias may be present.
Conclusion: Men with TDP tended to have higher PEDT scores and a prevalence of PE and ED. Moderate-to-severe ED and depressive symptoms are the independent predictive factors of PE.

Keywords: depressive symptoms; depression; premature ejaculation; type D personality.

Introduction

Premature ejaculation (PE) is widely considered the most common male sexual problem, with an approximately prevalence in general populations of 5%.[1] Men that experience PE often attempt to avoid sexual intimacy and dissatisfaction, leading to poor relationships with their sexual partners.[2,3] PE has been reported to significantly impact quality of life due to negative psychological consequences, such as decreased sexual self-confidence, distress, and anxiety.[4,5] A large observational study of 3016 men reported that men with PE complaints had a significantly lower frequency of sexual intercourse and exercise, and higher levels of comorbidities, including anxiety, hypertension, diabetes mellitus, and erectile dysfunction.[6] Further, a South Korean population-based study showed that men with PE were more likely to have depression than those without PE.[7] A systemic review of 8 studies indicated that depression significantly increased the risk of PE, with an odds ratio (OR) of 1.63.[8] Therefore, we considered that the association between PE and depression may be bidirectional.

Type D personality (TDP), also described as distressed personality, is defined as a combination of 2 dominant traits: negative affectivity (NA) and social inhibition (SI).[9] People with high NA tend to experience negative emotions, such as anxiety or sadness, more frequently.[10] Individuals with high SI

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tend to limit self-expression in social interactions due to fear of rejection or disapproval.[9] TDP has been reported to be associated with a negative impact on physical health status and increasing psychological distress, such as depression, anxiety, or panic disorder.[11,12] Although the majority of studies on TDP has focused on negative outcomes within cardiovascular conditions, one systemic review suggested that TDP is a vulnerability factor that may increase the risk of other medical conditions, such as chronic pain, asthma, sleep apnea, and diabetic foot syndrome.[13] However, the relationship between TDP and PE development remains unclear. Therefore, this study aimed to investigate the relationship between depression, TDP, and PE in young adult males. Considering that psychological and interpersonal factors may worsen or lead to PE, is there certainly correlation between TDP and the occurrence of premature ejaculation?

Materials and methods

Study design and population

This cross-sectional population-based online study was conducted between February 1 and 28, 2021. The study was approved by the Ethics Committee of Taipei City Hospital (TCHIRB-10911002-E). The online questionnaire was formulated on SurveyCake, a commercialized software website for creating tailored the set of questions, and disseminated via Facebook. Adult Taiwanese male participants between 20 and 40 years of age who had sexual intercourse in the past 6 months were invited to participate in this study. The study focused on young males in this age group who were relatively healthy with fewer chronic diseases. Participants with self-reported medical history such as hypertension, diabetes mellitus, and other comorbidities were excluded. A hyperlink to the online questionnaire was provided to adult Facebook users who could read and write in traditional Chinese. Resubmission was prevented via a validation question at the beginning of the questionnaire and by Internet user address recognition filtering. All data were presented as mathematical statistics for analysis to protect the privacy of responders.

Questionnaires

The online questionnaire consisted of questions related to general demographics, such as age; body mass index (BMI) and past medical history; sexual behavior experience in the past 6 months; and Premature Ejaculation Diagnostic Tool (PEDT), 5-item International Index of Erectile Function (IIEF-5), Type D Scale-14 (DS14), and Depression and Somatic Symptom Scale (DSSS) tests.

The 5-item PEDT is a validated screening questionnaire for PE used during clinical trials and corresponds well to the DSM-IV-TR PE definition.[14] Participants were classified as no PE ($\leq$8), probable PE (9-10), or having PE ($\geq$11) according to their PEDT score, within a range of 0 to 20. ED status was evaluated utilizing the IIEF-5 assessment. Respondents provided ratings on a scale from 1 to 5 for each of the 5 items, resulting in a total score ranging from 5 to 25. A higher total score was indicative of the better erectile function. The severity of ED was categorized into 4 grades: normal erectile function (score of 22-25), mild to moderate (score of 12-21), moderate (score of 8-11), and severe (score of 5-7).[15] The presence of TDP was screened with the Taiwanese version of the DS14, which contains 2 reliable subscales with 7 items each for NA and SI.[9,16] Each question in the Taiwanese version of the DS14 is rated on a 5-point Likert scale (0 = false, 4 = true). Participants with subscores $\geq$10 were defined as having TDP. Similarly, the DSSS has been proven to be a validated scale for measuring both depression and somatic symptoms in Taiwan.[17,18] The validated questionnaire consisted of a 12-item depression subscale and a 10-item somatic subscale. Each item is rated from 0 to 3, corresponding to the severity of the symptoms (absent, mild, moderate, and severe, respectively).

Statistical analysis

All statistical analyses were performed using the IBM SPSS Statistics software for Mac, version 24. Descriptive statistics were categorized into 2 groups represented by the presence or absence of TDP. The chi-square test and independent Student *t* test were used to compare categorical and numerical variables, respectively. Univariate and multivariate logistic regression analyses were conducted to calculate the ORs and 95% confidence intervals (CIs) of risk factors related to PE. All data are presented as percentage or mean $\pm$ SD. Statistical significance was defined as a 2-sided P value $<.05$.

Results

The respondents' demographic characteristics are shown in Table 1. A total of 2558 Taiwanese males with mean age 31.3 ± 5.3 were enrolled in the study. The mean PEDT of all participants was 5.0 ± 4.5. Among these respondents, 315 (12.3%) were classified as having PE, and 186 (7.3%) and 2057 (80.4%) participants had possible PE and no PE, respectively. Additionally, 767 (30.1%) men were reported to have moderate-to-severe ED. A total of 1249 (48.8%) participants met the criteria for TDP. The mean PEDT score of men with TDP was significantly higher than that of those without TDP (5.6 ± 4.8 vs 4.4 ± 4.1; $P < .001$). Furthermore, using the PEDT score $\geq$11 as a cutoff point, the prevalence of PE was significantly greater in men with TDP than in those without TDP (16.2% vs 8.6%; $P < .001$). Men with TDP had significantly lower IIEF-5 scores (17.4 ± 5.1 vs 19.5 ± 4.5; $P < .001$). The DSSS, including the total scores, and the depression and somatic subscales, were also significantly higher in men with TDP than in men without TDP (all $P < .001$). However, other parameters, including age and BMI, were similar between the 2 groups.

Logistic regression analyses used to evaluate variables that could predict clinical PE are shown in Table 2. In the univariate analysis, all parameters, except BMI, were significantly associated with PE ($P < .001$). Notably, in the first model composed of age, presence of TDP, and subscores of DSSS, only moderate-to-severe ED ($P < .001$) and the depressive subscore of the DSSS (OR, 1.041; 95% CI, 1.012-1.07; $P = .005$) were significantly predictive of PE. Likewise, in the second model composed of age, SI, NA, and DSSS subscores, moderate-to-severe ED ($P < .001$) and depressive subscores (OR, 1.042; 95% CI, 1.017-1.067; $P = .001$) remained the significant predictors of PE. Notably, age >30 years and the presence of TDP, SI, or NA $\geq$10 failed to predict PE.

Discussion

This current study aimed to explore the relationship between PE, depression, and TDP via a validated questionnaire used to

Table 1. Demographic data of total participants and participants with and without TDP.

Characteristic	Total	Without TDP	With TDP	*P* value
Sample	2558 (100)	1309 (51.17)	1249 (48.83)	
Age, y	31.3 ± 5.3	31.3 ± 5.3	31.3 ± 5.3	.721
<30 y	1176 (46	610 (46.6	566 (45.3	—
≥30 y	1382 (54	699 (53.4	683 (54.7	.515
BMI, kg/m^2	25.0 ± 4.5	24.9 ± 4.4	25.1 ± 4.6	.231
<25 kg/m^2	1511 (59	778 (59.4	733 (58.7	—
25 kg/m^2	1047 (41	531 (40.6	516 (41.3	.701
IIEF-5	18.5 ± 4.9	19.5 ± 4.5	17.4 ± 5.1	<.0001
Normal (22-25)	818 (32	510 (39	308 (24.7	—
Mild (17-21)	973 (38	509 (38.9	464 (37.1	—
Mild to moderate (12-16)	490 (19.2	196 (15	294 (23.5	<.0001
Moderate (8-11)	181 (7.1	67 (5.1	114 (9.1	<.0001
Severe (5-7)	96 (3.8	27 (2.1	69 (5.5	<.0001
PEDT	5.0 ± 4.5	4.4 ± 4.1	5.6 ± 4.8	<.0001
Yes (PEDT ≥11)	315 (12.3	113 (8.6	202 (16.2	<.0001
Possible (PEDT 9-10)	185 (7.3	94 (7.2	92 (7.4	—
No (PEDT ≤8)	2057 (80.4	1102 (84.2	955 (76.5	—
DS14				
Total score	23.7 ± 11.6	14.7 ± 7.0	33.2 ± 7.1	<.0001
Negative affectivity	12.5 ± 6.9	7.8 ± 5.2	17.4 ± 4.7	<.0001
Social inhibition	11.2 ± 6.1	6.8 ± 4.5	15.8 ± 3.8	<.0001
DSSS				
Total score	11.7 ± 10.0	7.6 ± 6.7	16.0 ± 10.9	<.0001
Depression subscale	7.0 ± 6.2	4.2 ± 4.1	10.0 ± 6.7	<.0001
Somatic subscale	4.7 ± 4.6	3.4 ± 3.4	6.0 ± 5.2	<.0001

Values are n (%) or mean ± SD. Abbreviations: BMI, body mass index; DS14, Type D Scale-14; DSSS, Depression and Somatic Symptoms Scale; IIEF-5, 5-item International Index of Erectile Function; PEDT, Premature Ejaculation Diagnostic Tool; TDP, type D personality.

Table 2. Logistic regression analyses of predicted factors associated with premature ejaculation among participants.

Characteristic	Univariate analysis		Model 1 multivariate analysis		Model 2 multivariate analysis	
	OR (95% CI)	*P* value	OR (95% CI)	*P* value	OR (95% CI)	*P* value
Age						
<30 y	1 (ref)		—		—	
≥30 y	1.265 (1.038-1.542)	.02	1.226 (1-1.503)	0.05	1.215 (0.99-1.491)	.062
BMI						
<25 kg/m^2	1 (ref)		—		—	
≥25 kg/m^2	0.855 (0.7-1.046)	.127	—		—	
IIEF-5						
Normal (22-25)	1 (ref)		—		—	
Mild (17-21)	1.546 (1.192-2.004)	.001	1.385 (1.064-1.804)	.016	1.384 (1.063-1.802)	.016
Mild to moderate (12-16)	2.178 (1.63-2.911)	<.0001	1.765 (1.308-2.383)	<.0001	1.747 (1.291-2.358)	<.0001
Moderate (8-11)	3.167 (2.181-4.599)	<.0001	2.513 (1.713-3.687)	<.0001	2.487 (1.695-3.649)	<.0001
Severe (5-7)	3.854 (2.426-6.123)	<.0001	2.811 (1.738-4.546)	<.0001	2.789 (1.723-4.514)	<.0001
TDP						
Without TDP	1 (ref)		—		—	
With TDP	1.639 (1.345-1.997)	<.0001	1.111 (0.885-1.4)	.36	—	
DS14						
Total score	1.028 (1.02-1.037)	<.0001	—		—	
Negative affectivity	1.042 (1.028-1.057)	<.0001	—		0.994 (0.972-1.017)	.625
Social inhibition	1.049 (1.033-1.066)	<.0001	—		1.02 (0.999-1.042)	.058
DSSS						
Total score	1.037 (1.028-1.047)	<.0001	—		—	
Depression subscale	1.062 (1.047-1.078)	<.0001	1.042 (1.017-1.067)	.001	1.041 (1.012-1.07)	.005
Somatic subscale	1.066 (1.046-1.087)	<.0001	0.971 (0.906-1.04)	.399	0.97 (0.905-1.04)	.39

Abbreviations: CI, confidence interval; BMI, body mass index; DS14, Type D Scale-14; DSSS, Depression and Somatic Symptoms Scale; IIEF-5, 5-item International Index of Erectile Function; OR, odds ratio; TDP, type D personality.

diagnose PE in a young Taiwanese adult male population. The results of the questionnaire survey revealed that the prevalence of PE in young Taiwanese males between 20 and 40 years of age was 12.3%. A prior study reported that the prevalence rate of PEDT-diagnosed PE was 7% in Taiwan and 16% in Asia-Pacific countries.[19] The incidence of PEDT-diagnosed PE varied from 14% to 19% in the 18- to 35- and 36- to 45-year-old groups, respectively.[19] Another study showed that the prevalence of PE diagnosed with PEDT score ≥11 in Korean men was 11.3%.[20] Thus, our results are consistent with previous studies and can be representative of young males in the general Taiwanese population. In this survey,

we used validated PEDT to diagnose PE without considering intravaginal ejaculation latency time. Moreover, these men with symptoms or complaints of PE may be experiencing unfavorable personal repercussions and psychological distress. According to Waldinger,[21] these men would be better categorized as having natural variable PE or premature-like ejaculatory dysfunction. Therefore, it is recommended that males with natural variable PE receive psychoeducation and reassurance, with psychotherapy and/or counseling being the first line of treatment for men with premature-like ejaculatory dysfunction.[22]

We found that young males with more depressive symptoms were more likely to experience PE; however, a specific personality composed of NA and SI was unrelated to the development of PE. PE is a multifactorial sexual dysfunction that is associated with a wide range of medical, social, and psychological factors in the general population. Men with PE are more likely to have poor quality of life and negative psychological consequences, such as excessive stress, depression, and anxiety.[4,23] Nevertheless, the etiology of PE can generally be divided into psychogenic and biogenic factors.[24] Anxiety is considered a psychological factor in precipitating rapid ejaculation, as increased anxiety may stimulate the sympathetic nervous system responsible for the emission phase of ejaculation. Moreover, a single-center prospective study found that depression, chronic prostatitis, ED, and anxiety disorders may contribute to the etiology of acquired PE.[25] Additionally, PE in males has been reported to cause sexual disorders and trigger higher depression levels in their female partners.[2] Therefore, as more evidence uncovers the bidirectional relationships, it is important to recognize that psychogenic effects may contribute to PE.

Few studies have investigated the correlations between personality traits and PE. In the present study, men with TDP had a significantly greater prevalence of PE, higher PEDT scores, and higher DSSS scores in total, including the depression and somatic subscales. A study has shown that men who reported PE tended to react negatively to novelty and could not easily adapt to changes in their surrounding environment.[26] Another study also revealed that lower novelty seeking and self-transcendence and higher harm avoidance were found in men with complaints of PE.[27] Further, PE has been implicated in having a significant impact on negative psychological states, such as decreased sexual self-confidence, distress, and anxiety.[4,5] In comparison, individuals with TDP not only experience negative emotions and lower levels of well-being, but also feel nervous and insecure during interactions with others.[9,16] Therefore, these similar psychosocial characteristics between PE and TDP may explain why men with TDP tend to have PE.

In multivariate analysis, we found that depressive symptoms could predict PE. This may be because depression mediates the influence of TDP on PE. However, it is worth noting that even though depression has a substantial negative psychological effect in patients with PE,[7] the mechanism by which depression affects PE has not yet been clearly elucidated. Several studies have demonstrated high comorbidity between depression and ED.[28,29] Because depressive symptoms inhibit sexual desire and impair erectile function, poor sexual function may concurrently induce low mood, thereby leading to the development of depressive symptoms.[30] In addition, the coexistence of ED and PE has also been reported in a systematic review.[31] We found that moderate-to-severe ED could also predict PE in multivariate analysis. Previous studies have been reported that ED is associated with prominently severe PE symptoms.[1,25] Thus, we speculated that the bidirectional relationship between ED and depression might play an important role in the development of PE. Another study demonstrated that male patients with depression were at an increased risk of prostatitis,[32] which may be one of the potential mechanisms by which depression leads to PE. PE negatively impacts various aspects of men's lives, including lack of sexual confidence, poor couples' sexual relationships, impaired quality of life, and psychological disorders, including depression.[3,33] Therefore, psychosexual therapy has been considered a useful as a monotherapy or part of combination management for PE because recognizing the psychological causes of PE is essential for the proper evaluation and treatment of PE in clinical practice.[34,35]

However, the association between age and PE remains unclear. In the present study, we found that an age >30 years was unrelated to PE. In comparison, an Internet-based survey of 12 113 men indicated a higher prevalence of PE in men <25 years of age,[23] while another systematic review of 8 studies showed that age was not associated with the prevalence of PE among men >18 years of age.[8] We considered that the discrepancy among studies may be due to the variable cutoff point of age, the definition of PE, and the possible mechanisms of PE among different study populations. Moreover, younger men may have less sexual experience and lack ejaculatory control. However, as men age, the prevalence of ED increases, as the inability to control ejaculation would be exacerbated due to the enhanced pressure to maintain an erection.

Furthermore, a population-based study of 5000 mid-Europeans 35 to 74 years of age reported that the prevalence of TDP was 22.2%.[36] In addition, a large cross-sectional study of 5012 Swedish adolescents between 15 and 18 years of age indicated that 10.4% of boys and 14.6% of girls were diagnosed with TDP.[37] Similarly, a Chinese study of 326 patients with coronary heart disease reported a TDP prevalence of 31%.[38] However, the prevalence of TDP in the present study was 48.8%, which was relatively higher than that reported in the aforementioned studies. We believe that the divergence in the prevalence of TDP might be affected by the distribution of age, culture, generation, or sex. Moreover, our sample was obtained from Internet users whose personality traits may be influenced by online behaviors. However, a meta-analysis of the relationship between personality factors and Facebook addiction has reported that loneliness, impulsivity, and shyness are significantly associated with Facebook addiction.[39] In addition, participants may feel embarrassed to answer sensitive private issues during face-to-face interviews, and respondents may provide socially acceptable responses. Therefore, we considered that the online setting of this study could help eliminate this potential confounding factor.

Nonetheless, this study has several limitations. First, the obvious limitation was the cross-sectional design of the study, which have limited the investigation of causality. Therefore, the causal relationships among depression, PE, and TDP and the ambiguous mechanism between depressive symptoms and PE must be elucidated in future prospective studies. Second, the application of PEDT without stopwatch-recorded intravaginal ejaculation latency time could only screen participants with PE, and failed to further classify participants as lifelong or acquired PE. Third, participants with self-reported medical histories such as hyperthyroidism, urinary tract infection, or metabolic syndrome were excluded in the present study.

However, urinary analysis and blood chemistry studies like hormone survey cannot be obtained based on self-reported online questionnaire. Additionally, underdiagnosed hyperthyroidism and prostatitis may have some influence on PE development. Fourth, participants recruited from the Internet-based survey via Facebook may have selection bias in the population. To attenuate the confounding effect, we focused on young males between 20 and 40 years of age who were relatively healthy without the need for long-term medications or chronic illness. Nevertheless, our study maintains its relevance because the psychological effects of PE are prominent in young adults.

Despite these limitations, this study is of high importance because, to our knowledge, this is the first study to evaluate the association between PE, TDP, and depression. Besides, the results of this study provided a glance at the psychological aspect of PE and may aid urologists' management of patients with PE in a biopsychosocial way.

In summary, the hypothesis that men with TDP are more likely to develop PE was established in the present study. We observed that TDP has an univariable association with PE, and does not emerge as significant predictor on multivariable analysis. After adjusted multivariable analysis, depression and moderate-to-severe ED were identified as the independent factors associated with the increased risk of PE.

Conclusion

We found that 12.3% of Taiwanese young men between 20 and 40 years of age had PE. Among them, those with TDP tended to have higher PEDT scores, lower IIEF-5 scores, and a greater prevalence of PE. After adjustment, only depressive symptoms and moderate-to-severe ED were independent predictors of PE. Therefore, we suggest that urologists should evaluate the extent of depression in young male patients with PE and provide referrals for further psychiatric assessment and treatment that would be helpful.

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Author Contributions

W.-M.C.: Conceptualization, Data curation, Formal analysis, Investigation, Project administration, Writing – Original Draft, Writing – Review & Editing. Y.-H.F.: Conceptualization, Formal analysis, Project administration, Resources, Supervision, Visualization, Writing – Original Draft. Y.-J.L.: Methodology, Validation, Writing – Review & Editing. W.-C.L.: Writing – Original Draft, Writing – Review & Editing.

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Conflicts of Interest

All the authors proclaim that they have no conflict of interest or any relationships which could have a possibility to influence this work.

Data Availability

The data supporting the findings of this study will be available by the authors, without any reservation.

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