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Impact of depression on overactive bladder

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Abbreviations & Acronyms

OAB = overactive bladder
 OABSS = overactive bladder symptom score
 QIDS-J = Japanese validated quick inventory of depressive symptomatology
 UUI = urgency urinary incontinence

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Depression is a common illness and a major healthcare burden worldwide, being found in approximately 6% of the general population.^{1,2} Previous reports have suggested that patients with depression and anxiety show severe urinary symptoms compared with control individuals.¹ We carried out a Web-based questionnaire among healthy individuals to show the correlation between depression and OAB in Asian Japanese individuals.

We carried out a Web-based questionnaire among 600 individuals (300 men and 300 women). The survey included 100 individuals per 10-year age group from 20 to 70 years. We carried out the QIDS-J to assess depression and the OABSS to assess bladder symptoms. The QIDS is a psychometric evaluation in patients with chronic major depression and has been used in a large number of clinical trials for monitoring depressive symptoms.³ Ultimately, 509 individuals (260 men and 249 women; 84.8%) responded to the entire questionnaire. For depression, we used five grades to cover light-to-severe symptoms according to the QIDS-J scale (no depression: 0–5 points, mild: 6–10 points, moderate: 11–15 points, severe: 16–20 points, very severe: ≥ 21 –27 points).³ For bladder symptoms, we evaluated the total points of the OABSS, the prevalence of OAB (both a total score of ≥ 3 and an OABSS Q3 score of ≥ 2) and UUI (OABSS Q4 of ≥ 1).

According to the questionnaire, depression was absent in 286 (56.2%) individuals, mild in 107 (21.0%), moderate in 66 (13.0%), severe in 30 (5.9%) and very severe in 20 (3.9%). Mild-to-severe depression was noted in 107 men (41.2%) and 116 women (46.6%). An increasing total OAB score was correlated with an increasing QIDS-J grade: 1.6 ± 2.0 for no depression, 2.6 ± 2.1 for mild, 2.9 ± 3.0 for moderate, 3.2 ± 3.3 for severe and 3.6 ± 4.4 for very severe. An increasing prevalence of OAB and UUI was also correlated with an increasing QIDS-J grade: 30 (10.5%) and 28 (9.8%) for no depression, 19 (17.8%) and 27 (25.2%) for mild, 16 (24.2%) and 20 (30.3%) for moderate, 8 (26.7%) and 9 (30.0%) for severe, and 6 (30.0%) and 7 (35.0%) for very severe, respectively (Table 1). In 140 male individuals aged ≥ 50 years, the same tendency was observed in OAB, but not in UUI ($P = 0.023, 0.349$, respectively). The prevalence of OAB was 15 (17.7%) for no depression, 11 (31.4%) for mild depression and nine (45.0%) for moderate depression or more (Table S1).

When the QIDS-J score increased, so did the OABSS, and the prevalence of OAB and UUI. This result supported previous findings that patients with depression showed urinary symptoms.^{4–6} Previous studies have evaluated depression using the hospital anxiety and depression scale, King's health questionnaire, Center for Epidemiologic Studies Depression Scale, Geriatric Depression Scale, Beck anxiety inventory, and so on. The present study used the QIDS-J, which consisted of 16 items, including nine symptom domains. The QIDS includes all *Diagnostic and Statistical Manual of Mental Disorders* 4th edition criterion symptoms for major depressive disorder. The detailed mechanism underlying the relationship between urinary symptoms and depression is unclear, but the involvement of increased bladder sensation reflecting biological changes in both the emotion and micturition circuits within the brain has been suggested.¹ Ito *et al.* showed major depression to be a risk for bladder dysfunction and they speculated that depression might also cause OAB.⁷ Lee *et al.* investigated the correlation between a depressive/stress bladder sensation using an animal model. As a result, they concluded that depressive/stress causes OAB.⁸

The present study was limited by the number of participants being too small to carried out analyses for each age group. The increasing prevalence of OAB with age has been confirmed.

Table 1 OAB status in each QIDS-J score category

Variables	QIDS-J (0–5 points)	QIDS-J (6–10 points)	QIDS-J (11–15 points)	QIDS-J (16–20 points)	QIDS-J (≥21 points)	P-value
	No depression n = 286	Mild n = 107	Moderate n = 66	Severe n = 30	Very severe n = 20	
OABSS_Q1						
Mean ± SD	0.4 ± 0.5	0.6 ± 0.6	0.6 ± 0.6	0.6 ± 0.6	0.6 ± 0.7	0.183
Score ≥1, n (%)	116 (40.6%)	58 (54.2%)	34 (51.5%)	16 (53.3%)	10 (50.0%)	
OABSS_Q2						
Mean ± SD	0.5 ± 0.8	0.9 ± 0.9	0.7 ± 0.8	1.0 ± 1.0	0.9 ± 1.1	0.001
Score ≥1, n (%)	107 (37.4%)	64 (59.8%)	37 (56.1%)	17 (56.7%)	10 (50.0%)	
OABSS_Q3						
Mean ± SD	0.5 ± 0.9	0.8 ± 1.0	1.0 ± 1.3	1.1 ± 1.3	1.1 ± 1.6	<0.001
Score ≥1, n (%)	81 (28.3%)	56 (52.3%)	33 (50.0%)	17 (56.7%)	8 (40.0%)	
OABSS_Q4						
Mean ± SD	0.1 ± 0.5	0.3 ± 0.7	0.7 ± 1.2	0.6 ± 1.1	1.0 ± 1.6	<0.001
Score ≥1, n (%)	28 (9.8%)	27 (25.2%)	20 (30.3%)	9 (30.0%)	7 (35.0%)	
OABSS total score						
Mean ± SD	1.6 ± 2.0	2.6 ± 2.1	2.9 ± 3.0	3.2 ± 3.3	3.6 ± 4.4	<0.001
OAB						
n (%)	30 (10.5%)	19 (17.8%)	16 (24.2%)	8 (26.7%)	6 (30.0%)	0.003
UUI						
n (%)	28 (9.8%)	27 (25.2%)	20 (30.3%)	9 (30.0%)	7 (35.0%)	<0.001

In addition, in men, bladder outlet obstruction induced by benign prostate hyperplasia also affects the OAB score, especially at older ages. In addition, QIDS-J is just one of the measures to evaluate the status of depression; however, it does not always represent a clinical diagnosis. The present results showed that 286 (56.2%) individuals showed no depression, whereas the other 223 (43.8%) individuals showed a QIDS-J score of ≥6. However, not all individuals showed depression. The findings of the present study simply suggested the QIDS-J score and OAB status. Thus, further studies are required to confirm the effect of depression.

Despite this limitation, a correlation between the QIDS-J and OAB was observed in Japanese individuals, suggesting that depression affects urinary symptoms.

Conflict of interest

None declared.

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Supporting information

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

Table S1. OAB status in each QIDS-J score categories in men aged ≥50 years.

Editorial Comment

Editorial Comment to Impact of depression on overactive bladder

Kawahara *et al.* studied 509 individuals (aged 20–79 years) by Web questionnaires.¹ They found depression in 43.8% (a little more common than that in the general population), no

depression in 56.2%, and there was a relationship between depression and overactive bladder (OAB). OAB causes bother, particularly when associated with urinary