

# Do patient perception and objective symptoms correlate in patients with overactive bladder syndrome? An analysis based on Patient Perception of Bladder Condition

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## Introduction

Improved quality of life (QOL) is an important goal in the management of patients with overactive bladder syndrome (OAB). QOL is typically assessed by tools such as the Patient Perception of Bladder Condition questionnaire (PPBC). The PPBC has been validated for construct and test-re-test validity and has been used in many clinical studies. To improve our understanding how PPBC relates to OAB symptoms, we have analyzed two recently reported, large non-interventional studies to explore the associations between PPBC and individual OAB symptoms. Such associations were explored at baseline and after treatment.

## Methods and Materials

Two non-interventional studies of similar design were analyzed [1]. Briefly, patients were invited to participate if they started treatment with propiverine ER (30-45 mg/day; dose adjustment during the study was permitted) at the recommendation of their physician. PPBC and diary parameters of urgency, frequency, nocturia and incontinence were captured at baseline and after 12 weeks of treatment.

Based on PPBC being an ordinal variable and not exhibiting a Gaussian distribution, PPBC is described as median values with 95% confidence intervals (CI). For the same reason, non-parametric correlation analyses (Spearman-Rank correlation) were performed between PPBC and each OAB symptom at baseline and after 12 weeks of treatment. Strength of association was described by Spearman r with its CI; the degree of variability in PPBC that can statistically be attributed to that of any OAB symptom was expressed as r<sup>2</sup>. Due to the exploratory and post-hoc character of the evaluation, no hypothesis-testing statistical analyses was performed. Instead, we used the data from two studies to test robustness of the results. While the decision to use the data from the two reported studies was made after the trial had been completed, the statistical analysis plan for the present analyses was finalized before any data related to PPBC had been inspected.

## Results

Studies 1 and 2 included 1335 (median age: 68 years, 66% female) and 745 (median age: 69 years, 63% female) patients, respectively. Median PPBC at baseline was 5 [5; 5] in both studies and decline to 2 [2; 3] and 3 [3; 3] in studies 1 and 2, respectively, after 12 weeks of treatment.

At baseline, PPBC exhibited no correlation with age (Spearman r = 0.0175 [CI -0.0385; 0.0733] and 0.0453 [CI -0.0307; 0.1208] in studies 1 and 2, respectively). The strength of correlation between PPBC and any of the OAB symptoms was only moderate at baseline with Spearman r ranging from 0.2045-0.3553 (Table 1).

**Table 1:** Correlation of PPBC and OAB symptoms at baseline reported as r [95% CI] based on Spearman rank correlation.

	Study 1		Study 2	
	r [CI] r <sup>2</sup>	n	r [CI] r <sup>2</sup>	n
Urgency	0.3528 [0.2992; 0.4041] 0.1245	1136	0.2573 [0.1796; 0.3318] 0.0662	614
Incontinence	0.3086 [0.2534; 0.3618] 0.0951	1136	0.2932 [0.2139; 0.3687] 0.0860	569
Frequency	0.3553 [0.3052; 0.4035] 0.1262	1288	0.3413 [0.2719; 0.4071] 0.1165	697
Nocturia	0.2045 [0.1502; 0.2575] 0.0418	1298	0.3203 [0.2499; 0.3872] 0.1026	697

The correlations between PPBC and urgency, incontinence, frequency and nocturia strengthened at the 12 weeks' time point (Table 2). However, they remained moderate with Spearman r ranging from 0.3665-0.5160. Of note, the CI of Spearman r at baseline and after 12 weeks of treatment did not overlap for a given symptom in most cases.

**Table 2:** Correlation of PPBC and OAB symptoms after 12 weeks of treatment reported as r [95% CI] based on Spearman rank correlation

	Study 1		Study 2	
	r [CI] r <sup>2</sup>	n	r [CI] r <sup>2</sup>	n
Urgency	0.4905 [0.4421; 0.5359] 0.2406	1070	0.5160 [0.4502; 0.5762] 0.2263	555
Incontinence	0.3665 [0.3114; 0.4191] 0.1343	1053	0.4354 [0.3616; 0.5037] 0.1896	531
Frequency	0.4907 [0.4448; 0.5340] 0.2408	1183	0.4762 [0.4118; 0.5358] 0.2268	636
Nocturia	0.4279 [0.3790; 0.4745] 0.1831	1195	0.4580 [0.3924; 0.5189] 0.2098	637

## Discussion

PPBC is only moderately correlated with each of the OAB symptoms of urgency, incontinence, frequency and nocturia. Based on r<sup>2</sup>, only 4-13% of the variability of PPBC at baseline can statistically be attributed to that in OAB symptoms. The correlations strengthened after treatment, as indicated by the observation that CIs of Spearman r before and after treatment in most cases did not overlap. Despite this strengthening, still only 13-24% of variability in PPBC could be attributed to that of any OAB symptom based on r<sup>2</sup>. Further support for a poor correlation between PPBC and individual OAB symptoms comes from the observation that PPBC at baseline was not correlated with age, whereas many studies have shown that OAB symptoms increase with age.

## Conclusions

We conclude that voiding diary parameters reflect patient perception of OAB at baseline and after treatment only to a minor degree. OAB symptoms and patient perception should be considered for a complete clinical picture of OAB.

## References

1. M. C. Michel et al. (2018) Neurourol Urodyn 37: S401-S402