Impact of a health education intervention in overactive bladder patients

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Objective: *To assess a standardized and simple educational intervention in overactive bladder (OAB) patients to improve compliance with anticholinergic medication, increase the use of concomitant behavioral treatments, and improve patients' perception of bladder symptoms.*
Materials and methods: *This is a 16-week open-label randomized trial of tolterodine combined with an education intervention for the experimental group versus tolterodine alone (no intervention) for the control group. The setting was in family medicine and urology clinics in Ontario. The participants were male and female adults with OAB symptoms. Both groups received tolterodine prescriptions. The intervention patients received printed information and an explanation about OAB, medication use, and behavioral treatments (kegel exercise, bladder stretching, fluid regulation). The primary outcomes were medication compliance and persistence at 16 weeks. Secondary outcomes were use of behavioral treatments and self-reported severity of symptoms.*
Results: *More patients in the intervention group (experimental) purchased their prescriptions ($p<0.05$). Compliance rate was greater for the intervention group (39%), versus the control group (31%) at 16 weeks although the difference was not significant ($p>0.05$). Significantly more patients started and/or continued non-drug treatments in the intervention group (82%) compared to the control group (53%) ($p<0.05$). Furthermore, more patients in this group reported improvement in severity of bladder symptoms ($p<0.05$).*
Conclusions: *The simple education intervention resulted in a greater, but not significant, increase in compliance with medication compared to the control group. It also resulted in a significantly increased use of behavior modification therapies and better self-perception of treatment outcome.*

Key Words: behavioral therapy, health education intervention, anticholinergic medication, tolterodine

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Introduction

Overactive bladder (OAB), with its symptoms of urinary urgency with frequency, nocturia, with or without urge incontinence,[1] is a highly prevalent and distressing disorder.[2] It has a major adverse impact on patients' health-related quality of life.[3-6] The symptoms of OAB can be effectively treated. Pharmacological therapies available for the treatment of OAB include antimuscarinic agents, such as oxybutynin and tolterodine, therapies with mixed actions such as imipramine, and occasionally hormonal medications such as estrogen.[1] Tolterodine is an antimuscarinic agent that has been shown to be equivalent to

oxybutynin in its effect but with a lower incidence of dry mouth. Its safety and effectiveness have been demonstrated previously in several clinical trials.[7,8]

Despite the proven efficacy of antimuscarinic agents, their usefulness is limited by generally poor patient compliance. A report from the Regie de l'Assurance Maladie du Quebec database indicated that the probability of a patient taking an antimuscarinic agent at 3 months following initiation of treatment was only 22%.[9] Apart from side effects, one factor that may contribute to poor patient compliance with antimuscarinic agents is incorrect expectations regarding treatment effect onset.[7,10]

An algorithm developed for treatment of OAB symptoms recommends both behavioral and pharmacological interventions.[11] Behavioral modifications include regulation of fluid intake, limiting caffeine, bladder and pelvic floor muscle training, and urge suppression. Studies have shown that behavioral therapies are more effective than placebo for OAB treatment.[12-15] Combining behavioral and pharmacological interventions may also have additive effects.[16] For example, one study showed that the reduction in voiding frequency was greater with an anticholinergic (tolterodine) plus simplified bladder training than the drug alone.[17]

Health education programs represent a proven method of enhancing patient compliance with long-term therapeutic regimens[18] and provide an opportunity to promote use of behavioral therapies. Specific aims of the current study were to assess the ability of a health education intervention to improve compliance with tolterodine, and promote the use of concomitant behavioral therapies. As recommended in the literature,[18-25] the education strategy was multifaceted in design. It incorporated written and verbal materials and educated patients about their condition, proper medication use, lifestyle, and behavioral modifications. It was also designed to be brief, simple, and easily administered in a busy Canadian medical office setting.

Materials and methods

Patient population

Ambulatory men and women, $\geq$ 50 years, who were suffering from the symptoms of OAB and presented to the investigators' practice for a scheduled visit, were eligible. OAB diagnosis was defined as symptoms of urinary urgency, frequency (>8 micturitions on average/24 h), nocturia >2 per night, with or without symptoms of urge incontinence.[26] Patients were required to have normal cognitive function and be able to read and understand English. Only those patients that were appropriate to receive tolterodine and who in their physician's opinion, would benefit from treatment with the medication were enrolled. Patients were excluded if they were enrolled in another clinical trial, suffered from stress incontinence only, were diagnosed with interstitial cystitis, had ongoing acute urinary tract infection, or were already taking tolterodine.

Patients were recruited from family medicine and specialist clinics, primarily urology, in four Ontario cities. Enrolment began in June 2000 and continued to December 2001. The relevant Ethics Committees for the sites approved the informed consent form.

Trial design and intervention

This was an open-label, 16-week randomized controlled trial of a health education intervention in combination with tolterodine (experimental group) compared to tolterodine alone (control group). The randomization scheme was concealed from all sites. Patients in both groups received the standard prescribing information normally provided by each physician. Patients randomized to the experimental group also received the health education intervention Table 1, provided by site personnel, consisting of a nurse or the physician previously trained on administration of the tool. Since it was designed as a real life study, no study drug was provided to patients free of charge in either arm and both groups received a prescription.

At enrolment, the health education intervention was provided to the patient. The person responsible for administering the intervention, either the physician or study nurse, briefly reviewed the information sheets with the patient (approximately 3 to 5 minutes) and recommended that all the information be reviewed at home. Following administration of the education material, the patient was encouraged to ask questions regarding OAB, their medication, or the study materials.

Outcome measures

The primary outcomes were medication compliance and persistence rates at 16 weeks. Persistence referred to the duration of time that the patient continued to take the drug regardless of the frequency or dose of administration. Compliance was defined as taking the drug as recommended (e.g. one tablet, twice daily, every day). 'Persistence' encompassed both compliant patients as well as those patients who continued taking therapy in a manner inconsistent with instructions provided by the physician. Secondary outcomes measured were the use of non-drug OAB

TABLE 1. **Components of the health education intervention**

Component	Description
An information sheet titled "Overactive Bladder and the Appropriate Use of Detrol "	This one page sheet provided descriptions of overactive bladder, how tolterodine works, how tolterodine should be taken, when the patient should expect to see improvement in their OAB symptoms, and what side effects they could experience.
An information sheet titled "Behavioral Modifications for Patients with Overactive Bladder"	This one page sheet provided descriptions of overactive bladder, how tolterodine works, how tolterodine should be taken, when the patient should expect to see improvement in their OAB symptoms, and what side effects they could experience.
A pamphlet titled "Important Information for Patients on DETROL"	The pamphlet provided more detailed information about tolterodine, how it works, how it should be taken, and potential side effects. The pamphlet also included the phone number for 'The Detrol Patient Education Program'. By enrolling in this program patients could speak with a registered nurse at any time about the use of tolterodine to manage their OAB symptoms.

treatments, (e.g. urge suppression. See Table 2), symptomatic assessments (daily micturitions, nocturnal micturitions, and weekly leakages), and change in self-reported severity of bladder problems. The symptomatic assessments were done with a standardized questionnaire administered by the telephone interviewer.

All data were collected through telephone interviews at 0, 5, 10 and 16 weeks. All patients were telephoned at 5, 10, and 16 weeks to determine if they were still taking the drug and, if so, were they taking it as prescribed. For patients who were no longer taking tolterodine, the date of discontinuation, reasons for discontinuation, and information on other therapies were collected. Regarding use of non-drug OAB treatments, data were collected on starting, continuing, or stopping treatments.

Statistical analysis

All patients enrolled into the study that received a prescription and completed the first telephone interview were considered evaluable Figure 1. A patient who provided Week 0 data, completed the 16 week follow-up interview with data provided at each scheduled follow-up interview, and continued to take the medication as prescribed was considered compliant. The date of discontinuing therapy was recorded for applicable patients. Those who were not taking the drug as prescribed or who discontinued the drug were classified as non-compliant on the dates that these incidents were reported.

Between group differences in compliance and persistence rates and self-reported severity of bladder problems were tested for significance using the normal approximation for comparison between two binomial

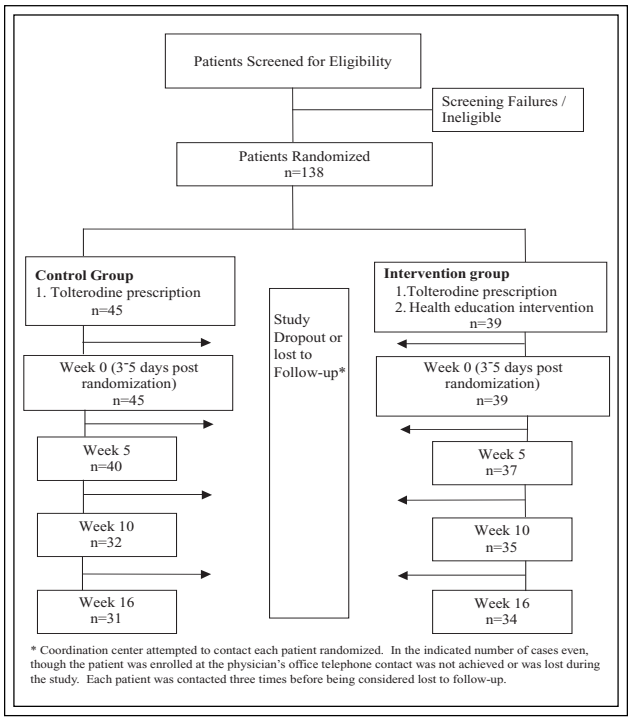

Figure 1. Flow chart for study procedures.

TABLE 2. **Behavioral modification information sheet**

Behavioral modifications for patients with overactive bladder
Tolterodine (detrol) may help to improve your overactive bladder symptoms. In addition to taking your tolterodine (detrol), there are a number of other ways which may help you gain more control over your bladder. Here are some tips that some people find helpful:

Fluid intake regulation
Try limiting your fluid intake before and during outings to prevent disruptions during your excursions.

Caffeine limitation
Caffeine can cause your body to produce more urine. Try to limit the amount of tea and coffee you drink, especially before bedtime.

Scheduled toileting
If you experience frequent leaking accidents, try to figure out how long you are generally able to hold your urine. Then, go to the bathroom at regular intervals, even if you do not feel an urge to urinate. This will help to keep your bladder empty and limit leakage.

Bladder stretching
Your bladder can be trained to hold urine better by causing it to stretch. The procedure for bladder stretching simply involves delaying urination. Try gradually holding urine longer by extending the time between trips to the bathroom. You might start by increasing the amount of time between trips by 15 minutes. This may prove difficult at first, but over time you may find you can delay urination for longer periods of time.

Pelvic floor exercises (Kegel exercises)
Strengthening your pelvic muscles can help prevent urine from leaking and may help to suppress sudden urges to urinate. To find your pelvic muscles, pretend you are trying to avoid passing gas or prevent a bowel movement. Try tightening the muscles for 5 to 10 seconds, and then relax them for about 10 seconds. Try repeating 10 to 20 times. Try gradually working your way up to doing a set of contractions about 3 times a day. It may take 3 to 4 weeks of regular exercising before any evidence of improvement is seen.

Urge suppression
When you feel a sudden urge to urinate, try to suppress it. Try to concentrate on something else (try counting backwards from 100), or try doing pelvic muscle exercises until the urge passes.

distributions. Comparison of behavioral modifications between the two groups at Week 16 was assessed using a Chi-square approximation for rates and proportions. For the three self-reported symptomatic assessments – improvement, staying the same, or worsening - within group changes were evaluated by using independent t-tests of the change scores.

Results

A total of 138 patients were enrolled in the study. Of these, data were available for 84 patients; 45 in the control group and 39 in the intervention group. Data were not available for 54 patients because they could not be contacted or they indicated that they did not wish to complete the interviews Figure 1. Overall, the two groups were well balanced with the exception of prescription status at Week 0. More patients in the intervention group obtained their prescriptions ($p<0.05$) Table 3.

Compliance and persistence

Figure 2 shows the compliance and persistence data. At each time point, the percentage of intervention patients who continued on therapy was higher than the percentage of patients in the control group, however the differences were not significant ($p>0.05$). The compliance rates were also not significantly different between groups and both decreased over 16 weeks ($p>0.05$). For patients who discontinued therapy, the primary reasons reported were a perception that the medication was not working or unpleasant side effects. The majority of patients who discontinued therapy did not switch to an alternative OAB treatment (i.e. drug, herbal remedies, surgery).

Use of non-drug OAB treatments

The percentage of patients that reported using non-drug OAB treatments prior to entering the study was similar in both groups. However, significantly more patients in the intervention group continued to use

TABLE 3. **Baseline demographics, disease and socio-economic characteristics**

	Control n=45	**Intervention n=39**
Mean age (SD)	63.1 (15.7)	65.7 (14.5)
% Male	15.6	7.7
Mean duration of OAB in years (SD)	8.7 (10.8)	8.7 (11.0)
Self-reported severity of bladder problems: n (%)		
Mild	13 (28.9)	13 (33.3)
Moderate	28 (62.2)	19 (48.7)
Severe	4 (8.9)	7 (18.0)
Current paid employment status: n (%)		
Full-time	12 (26.7)	9 (23.1)
Part-time	1 (2.2)	4 (10.3)
Not employed	32 (71.1)	26 (66.7)
Education: n (%)		
High school or less	27 (60.0)	25 (64.1)
Some college / university	10 (22.2)	5 (12.8)
College / university grad	8 (17.8)	8 (20.5)
Insurance plan: n (%)		
None	9 (20.0)	7 (18.0)
Employer	17 (37.8)	15 (38.5)
Government	17 (37.8)	16 (41.0)
Employer and Government	1 (2.2)	0 (0)
Prescription status at week 0: n (%)		
Patient obtained Rx*	37 (82.2)	38 (97.4)
If not, patient intends to fill Rx	6 (7.5)	0 (0)

Significantly more patients in the intervention group obtained their prescription by Week 0 (One-sided test, a = 0.05, reject hypothesis that there is no difference between the groups in obtaining prescription, using the normal approximation for comparison between two binomial distributions).

the behavioral modification remedies they indicated that they were using before study entry or started to use after Week 0 ($p<0.05$) Figure 3. In addition, a lower percentage of patients in the intervention group (12.8%) stopped using non-drug OAB treatments compared to the control group (28.9%).

Symptomatic assessments and self-reported severity

Table 4 shows the mean change in symptomatic assessments and the percentage of patients who improved, stayed the same, and worsened by self-reporting severity of bladder problems. There was a decrease from Week 0 for both the control and intervention groups for all three symptomatic parameters, however the differences between groups were not significant. However, significantly more patients in the intervention group improved (e.g. moderate to mild) ($p<0.05$). The percentage of patients that worsened was similar in both groups.

Discussion

This study assessed the effects of a simple health education intervention given with an anticholinergic medication to patients with OAB. The intervention was multifaceted, incorporated both written and verbal information, and educated patients about their condition, proper medication use, and about the onset of action of the drug, Information about lifestyle and behavior modification was also provided. The intervention was easily administered in the physician's office, requiring only a brief 5-minute discussion between patient and health care professional. Study duration of 16 weeks was selected since it is longer than the onset of action of the anticholinergic[7] and 8 weeks longer that the randomized trial of behaviour therapy and

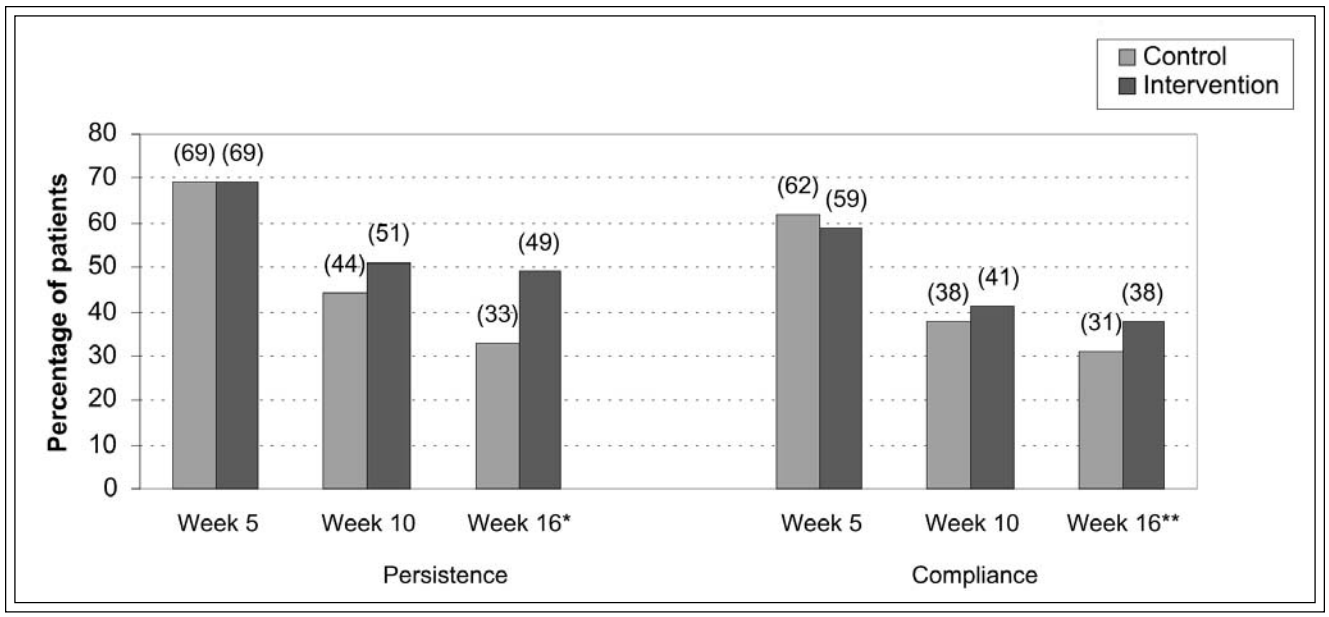

Figure 2. Compliance and persistance across study time points.

anticholinergics reported by Burgio and colleagues.[13]

After 16 weeks, 49% of patients in the intervention group and 33% of patients in the control group were persistent with the study drug. At that time, 39%and 31% of intervention and control patients respectively were also compliant with therapy. Although the differences between the two groups were not significant, the results suggest that the education program did contribute to improved patient persistence and compliance with drug therapy. These results are supported by findings from previous studies where education programs have been effective in improving adherence with drug therapy.[27-29]

The percentage of patients that reported using non-drug OAB treatment prior to entering the study was similar in both groups. However, significantly more patients in the intervention group started or continued to use non-drug treatments by Week 16. This is evidence that the intervention affected the way patients dealt with their OAB. This may also have

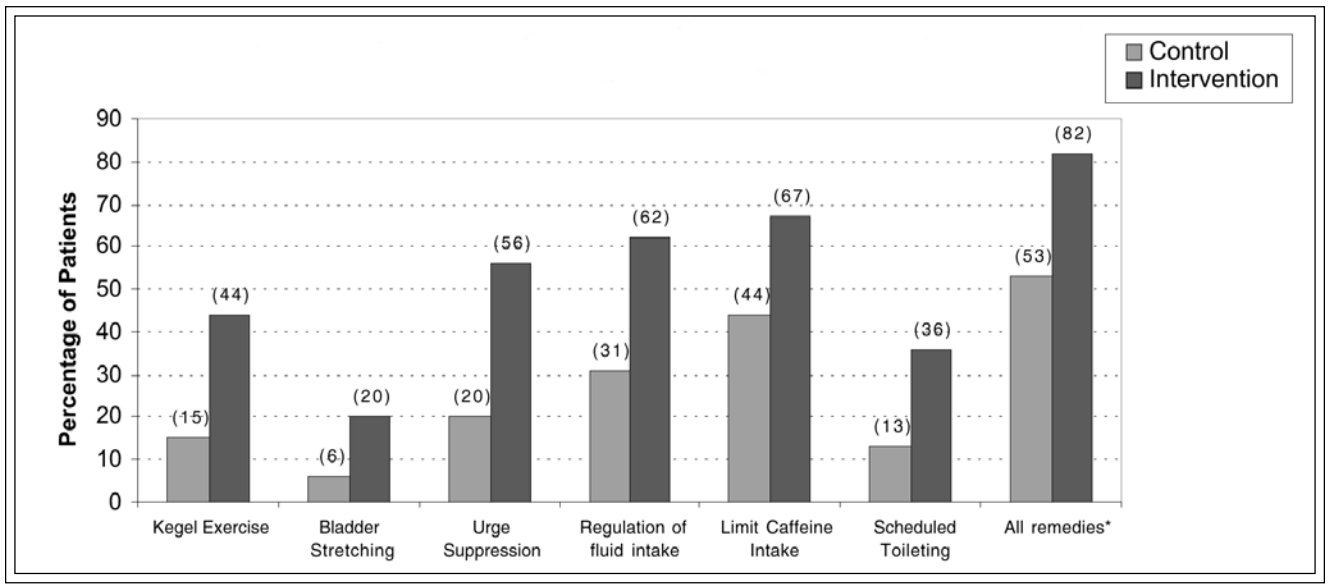

Figure 3. Use of non-drug OAB treatments continued or started after week (measured at week 16).

TABLE 4. **Changes in symptoms and self-reported improvement**

Change in symptomatic assessments	**Control n**	**Mean (SD)**	**Intervention n**	**Mean (SD)**
Daily micturitions+	28	-2.18 (4.89)	33	-1.82 (3.41)
Nocturnal micturitions++	30	-0.07 (0.91)	34	-0.44 (1.13)
Weekly leakages+++	17	-10.24 (19.56)	18	-7.72 (21.16)
Improvement in self-reported severity of bladder problems	**Control n**	**n (%)**	**Intervention n**	**n (%)**
Same	30	20 (66.7)	33	14 (42.4)
Improved¥	30	6 (20)	33	15 (45.4)
Worsened	30	4 (13.3)	33	4 (12.1)

Improved was defined as severe to moderate or mild or moderate to mild. Worsened was defined as mild to moderate or severe or moderate to severe.
+Daily micturitions decreased significantly in both groups;
++Patients also showed a decrease in the number of nocturnal micturitions however the result was significant only for the intervention group ($p<0.05$);
+++Weakly leakages also decreased in both groups however the result was significant only for the control group ($p<0.05$).
¥A significantly higher proportion of patients in the intervention group reported improving between Week 0 and Week 16 compared to patients in the control group ($p<0.05$).

had a positive impact on patients' perception of the severity of their OAB as a significantly higher proportion of patients in the intervention group reported improving over the study period.

Behavioral modification to improve the outcome of treatment has been examined in previous studies. Several clinical trials have demonstrated greater efficacy with behavior modifications, such as pelvic floor muscle training, compared to placebo.[12-15] In addition, there is evidence that combined drug therapy and behavioral modifications for OAB result in additive effects on health outcomes. A randomized study of 505 patients (≥18 years) with OAB compared tolterodine 2 mg twice daily plus simplified bladder training to tolterodine alone for 24 weeks.[17] Results indicated that the median percentage reduction in voiding frequency was greater with the combined regimen than with medication alone (33% versus 25%, $p<0.001$). A higher proportion of patients on the combined regimen also reported improvement in their bladder symptoms.

A limitation of this study was the small sample size. Although 138 patients were enrolled, data were available for 84 patients. The dropout rate was high since patients changed their minds about participating. This may have occurred since they had to purchase their own medication. They also did not receive the usual reinforcement of a clinical trial in which the subjects periodically meet the study personnel. There was insufficient power to demonstrate significant differences in persistence and compliance between the two study arms. Several other factors may have also influenced the compliance and persistence rates reported in our study. All patients were required to sign consent forms and agree to receive a series of phone calls related to their OAB prior to study enrolment. This may have pre-selected patients who were more likely to be compliant. This may also explain why the percentage of patients that reported filling their initial prescription was higher than reported in previous studies.[9] Furthermore, persistence and compliance with therapy were determined solely on data collected during a series of telephone interviews. Self-reported assessments of compliance and persistence may be inaccurate.

Another limitation may be that the intervention was too simple since majority of patients in both groups who discontinued therapy, primarily for lack of efficacy and/or side effects, did not switch to alternative OAB treatment (i.e. drug, herbal remedies, surgery). However, the intervention was designed to be brief in order to be fitted into a patient encounter in a busy Canadian medical office setting.

Other strategies to improve compliance and persistence might be to lengthen the education intervention and to bring the patients back

periodically to review their progress in managing the symptoms.

Despite these limitations the simple educational intervention resulted in overall better outcomes.

Conclusions

This study found that a health education intervention, easily administered in the physician's office, resulted in an increased compliance and persistence rate with anticholinergic medication, although not statistically significant. It significantly improved use of behavior modification therapies resulting in a better self-perception of symptom improvement. A combined pharmacological and non-pharmacological approach is ideal in OAB patients for maximizing health outcomes. This intervention was simple, comprehensive, and brief, and can be a practical and effective tool for physicians to provide to patients with OAB. □

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