



The Prevalence of Overactive Bladder Symptoms in Women in Algeria, Egypt, Jordan and Lebanon: A Cross-Sectional Population-Based Survey

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ABSTRACT

Aims: Estimate the prevalence of symptoms suggestive of overactive bladder (OAB) in women living in the Middle East to describe their demographic characteristics and explore treatment-seeking behavior.

Methods: Cross-sectional, population-based survey of women aged ≥ 40 years resident in Algeria, Jordan, Lebanon or Egypt. Respondents were recruited using computer-assisted telephone interview over approximately 4 months. Eligible respondents were asked to complete the OAB-V8, a validated questionnaire that explores

the extent of bother from the key symptoms of OAB without clinical investigations. In addition, information regarding demographics, comorbidities and treatment behavior was collected, and respondents were stratified by age.

Results: A total of 2297 eligible women agreed to participate. Mean age was 54 ± 10 years; over half (59.3%) were aged 40–55 years. Overall, 53.8% of eligible women had symptoms suggestive of OAB (Jordan 58.5%; Egypt 57.5%; Algeria 49.9%; Lebanon 49.0%), with over 90% also reporting symptoms of urinary incontinence. Only 13.0% of women with symptoms suggestive of OAB were currently receiving treatment, while most (74.3%) had never been treated; these data were consistent across country and age categories. Among the untreated subgroup, almost half (48.7%) reported they were ‘not bothered by symptoms,’ while 8.4% considered OAB to be ‘part of normal aging’ and 4.7% did not know it was treatable.

Conclusion: A high prevalence of symptoms suggestive of OAB was observed, and the majority had symptoms of urinary incontinence. Despite the high prevalence, most women had never received treatment. Considering the potential significant impact of OAB symptoms on health, quality of life and productivity, these findings highlight an unmet medical need in the population studied. Strategies to improve treatment-seeking behavior (e.g., through education and tackling the

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stigma associated with OAB symptoms) may improve the diagnosis, management and health outcomes of women with OAB in the Middle East.

Keywords: Cross-sectional; Middle East; Overactive bladder; Population-based survey; Prevalence; Urinary incontinence

Key Summary Points

Why carry out this study?

Overactive bladder (OAB) affects millions of people worldwide; symptoms experienced may have a negative impact on quality of life and may lead to some patients not seeking treatment.

There are few published data describing the prevalence of OAB symptoms and the associated treatment-seeking behavior of patients with OAB residing in the Middle East.

What was learned from the study?

A high prevalence of OAB was observed in the Middle East with approximately 50% of the women aged ≥ 40 years reporting symptoms suggestive of OAB and $> 90\%$ of these women reporting symptoms of urinary incontinence.

Despite the high prevalence of symptoms suggestive of OAB, 74% of women had never been treated and only 13% of women were currently receiving treatment.

There appears to be an unmet medical need in Middle Eastern women aged ≥ 40 years, and strategies to improve treatment-seeking behavior as well as the diagnosis, management and health outcomes may be required.

DIGITAL FEATURES

This article is published with digital features, including a summary slide, to facilitate understanding of the article. To view digital features for this article go to <https://doi.org/10.6084/m9.figshare.13296245>.

INTRODUCTION

Overactive bladder (OAB) is a common condition characterized by urinary urgency, usually accompanied by increased daytime frequency and/or nocturia, with or without urgency urinary incontinence (UUI; OAB-wet or OAB-dry, respectively), in the absence of urinary tract infection or other detectable disease [1, 2].

Some 546 million individuals worldwide were expected to be affected by OAB in 2018 [3], with the overall prevalence increasing with advancing age and highest rates reported in those aged 65–80 years [4–7]. OAB appears to affect similar proportions of women and men, although some of the available evidence suggests a slightly higher prevalence in women [3–5, 8]. The prevalence estimates for women in large population- or community-based epidemiologic studies range from 1.9% in China [9] to 8.1% in Japan [10] and 24.7% in the USA [5]. There is some evidence of an impact of race and ethnicity on the symptoms of OAB (although data are mainly limited to US populations) [11, 12].

The negative impact of OAB symptoms on psychosocial functioning and health-related quality of life (HRQoL) has been well documented [8, 13]. It is expected that daily living and participation in both social and occupational activities can be profoundly affected by OAB symptoms. A number of studies have therefore focused on the physical and emotional dimensions that have the most impact on HRQoL [14]. OAB has also been associated with anxiety and depression [15] and sleep disturbance [8]. Urinary incontinence, in particular, may have severe psychologic and social consequences, for example, an unwillingness to leave home without a familiarity of access to toilets. In addition, OAB represents a heavy

socioeconomic burden, affecting both employment and productivity [12, 16–18].

A systematic literature review estimated the total national cost of OAB in the USA to be \$65.9 billion in 2007, with an estimated increase to \$82.6 billion in 2020 [19]. An analysis of six western countries (Canada, Germany, Italy, Spain, Sweden and the UK) estimated that the total direct costs of OAB (excluding nursing home and productivity costs) were in excess of €3.5 billion (2005 costs) [20].

If conservative management strategies are ineffective, pharmacotherapy with oral antimuscarinics or beta-3 adrenoceptor agonists may result in OAB symptom improvement [21, 22]. Yet, despite the high burden from OAB and the availability of effective treatments, the number of patients with OAB seeking medical advice is consistently limited [23–26]. Few studies have investigated the prevalence of OAB symptoms and the associated treatment-seeking behavior in the Middle East, and none of the available studies have attempted to establish baseline data at a national or regional level [27–30].

METHODS

Study Design

This study was a cross-sectional, population-based telephone survey to identify women residing in Algeria, Jordan, Lebanon or Egypt with symptoms suggestive of OAB as measured by the validated OAB-V8 symptom bother questionnaire [31–33] over approximately 4 months in 2018.

Patient Recruitment and Eligibility

Women aged ≥ 40 years who were residing in one of the four countries (Algeria, Egypt, Jordan and Lebanon) during the study and who provided verbal informed consent via telephone were included. Women who reported currently being pregnant and/or had symptoms consistent with other obvious urinary conditions

(e.g., fever, dysuria and/or hematuria), including urinary tract infections, were excluded.

Data Collection

Data were collected directly from survey participants using the computer-assisted telephone interview (CATI) method [34]. Random Digit Dialing computer software was used to assist in determining telephone numbers to dial for each country from a national public telephone directory. This sampling methodology was utilized to maximize the coverage in all areas in each country (including urban, semi-urban and rural areas), taking landline area code into consideration. Based on our assumptions [30% of phone calls would be answered; 50% of households would have an eligible woman available; 15% of women would be aged ≥ 40 years; 30% would agree to consent and participate; and with a 15% prevalence of OAB (with a uniform prevalence across all countries)], it was estimated that a sample size of 550 women per country (total 2200) would achieve a margin of error of $\pm 3\%$ with a 95% confidence level (CI). Overall, it was estimated that 2.3% of women contacted would be eligible and willing to participate.

Conduct of the Survey

After providing a brief overview of the study, including the objective (conducting a health-related telephone survey) and the expected duration (< 15 min to complete the interview), the eligibility of each respondent was established (Table S1). Following confirmation of verbal consent, respondents were advised that they were free to withdraw from the study at any point during the call without having to provide any reason(s). Respondents were invited to complete the OAB-V8 questionnaire in their preferred language [English (Table S2), French, or Arabic] and were also asked to provide additional information regarding demographics and treatment behavior.

Data Analysis

Data collected from questionnaires were captured immediately on an electronic case report form electronic system to avoid data transfer errors. Data analyses were conducted using SAS Enterprise Guide, version 7.13 HF3. The OAB-V8 was designed to assess the extent of bother from four hallmark symptoms of OAB: urinary frequency, urgency, nocturia and urge incontinence [32]. Patients responded to eight questions using a 6-point Likert scale ranging from 0 (not at all) to 5 (a very great deal), with a maximum possible score of 40. The study was not designed to diagnose OAB patients, as it was not clinic based. However, the odds ratio for having OAB vs. not having OAB among those who scored ≥ 8 on the OAB-V8 questionnaire during its validation process was 95.7 (95% CI 29.3–312.4) [31, 32].

In our analysis, respondents who scored ≥ 8 on the OAB-V8 questionnaire plus scores ≥ 1 for questions 2 (bothered by an uncomfortable urge to urinate), 3 (bothered by a sudden urge to urinate with little or no warning) and 7 (bothered by an uncontrollable urge to urinate) were considered to have symptoms suggestive of OAB. Among respondents with symptoms of OAB, those who scored ≥ 1 on questions 4 (bothered by accidental loss of small amounts of urine) and 8 (bothered by urine loss together with a strong desire to urinate) were considered also to have urinary incontinence (OAB-wet).

Descriptive statistics were performed on qualitative data to summarize all outcome variables, including symptom description, basic demographics, comorbidities and treatment behavior. Respondents were stratified according to age (40–55, 56–64, 65–74 and ≥ 75 years), and there was no cap on any group size. Categorical variables were summarized as the number and proportion of the total study population, and by subgroups where appropriate, and continuous variables were reported as mean and standard deviation (SD). No formal hypothesis testing was performed.

Ethics Approval

The study was conducted with ethical approval and informed consent, and in accordance to Helsinki Declaration. The ethics approval procedure differed in each country. The review boards for each country and reference numbers are as follows: Egypt: Central IRB at Egyptian Ministry of Health (15-2018/19); Jordan: IRB at School of Medicine, University of Jordan (1692/2018/67); Algeria: IRB at EHU Oran Algeria and Central IRB notification to Algerian Ministry of Health (11-07-2018); Lebanon: IRB at Lebanese Hospital Geitaoui University Medical Centre (2018-IRB-010).

RESULTS

Study Population

A total of 32,261 households (Algeria, $n = 4704$; Egypt, $n = 5799$; Jordan, $n = 6475$; Lebanon, $n = 15,283$) were contacted by telephone. From these interactions, a total of 2297 women (Algeria, $n = 573$ [response rate: 12.2%]; Egypt, $n = 600$ [10.3%]; Jordan, $n = 561$ [8.7%]; Lebanon, $n = 563$ [3.7%]) met the inclusion criteria and agreed to participate in the telephone interview (an overall response rate of 7.1%). Demographics and lifestyle characteristics of the study respondents are shown in Table 1. Overall, the mean (SD) age was 54 (9.8) years, with lowest mean age (49.2 [8.6] years) in Algeria. Most respondents (59.3%) were in the 40–55 year age stratum, with $< 3\%$ aged ≥ 75 years (Fig. 1).

The mean (SD) score on the OAB-V8 questionnaire in the overall population was 10.9 (9.2), ranging from 9.7 (8.8) in Lebanon to 12.0 (9.9) in Egypt (Table 2). Overall, the prevalence of women with symptoms suggestive of OAB (i.e., scoring ≥ 8 on the questionnaire overall, plus scoring ≥ 1 for the urgency questions 2, 3, and 7) was 1235 (53.8%), with the highest prevalence in Jordan (328 [58.5%]), followed by Egypt (345 [57.5%]), Algeria (286 [49.9%]) and Lebanon (276 [49.0%]). The overall prevalence of OAB-wet (i.e., scoring ≥ 8 on the questionnaire overall, plus scoring ≥ 1 for questions 2, 3,

Table 1 Demographics and lifestyle characteristics of respondents

Characteristic	Algeria (n = 573)	Egypt (n = 600)	Jordan (n = 561)	Lebanon (n = 563)	Total (n = 2297)
Mean (SD) age, years	49.2 (8.6)	56.4 (9.6)	55.6 (9.9)	54.8 (9.4)	54 (9.8)
Age range, years [n (%)]					
40–55	457 (79.8)	286 (47.7)	299 (53.3)	321 (57.0)	1363 (59.3)
56–64	81 (14.1)	182 (30.3)	153 (27.3)	149 (26.5)	565 (24.6)
65–74	28 (4.9)	112 (18.7)	90 (16.0)	72 (12.8)	302 (13.1)
≥ 75	7 (1.2)	20 (3.3)	19 (3.4)	21 (3.7)	67 (2.9)
Mean (SD) height (cm)	162.9 (8.8)	160.7 (8.3)	161.3 (6.6)	161.8 (7.5)	161.7 (7.9)
Mean (SD) weight (kg)	72.1 (12.8)	83.8 (15.8)	75 (16.0)	71.2 (13.4)	75.4 (15.4)
Mean (SD) BMI (kg/m ²)	27.5 (6.7)	32.5 (7.1)	28.9 (6.2)	27.2 (5.3)	28.9 (6.6)
Married, n (%)	478 (83.4)	412 (68.7)	434 (77.4)	437 (77.6)	1,761 (76.7)
Post-menopausal, n (%)	250 (43.6)	438 (73.0)	350 (62.4)	359 (63.8)	1397 (60.8)
Smoker, n (%)	25 (4.4)	22 (3.7)	115 (20.5)	274 (48.7)	436 (19.0)
Employed, n (%)	189 (33.0)	133 (22.2)	127 (22.6)	145 (25.8)	594 (25.9)
University education, n (%)	213 (40.0) ¹	134 (25.3) ^a	NA	NA	347 (32.7)

BMI body mass index, NA not available, SD standard deviation

^a Percent (%) was calculated with a denominator excluding missing values (n = 41, Algeria; n = 71, Egypt)

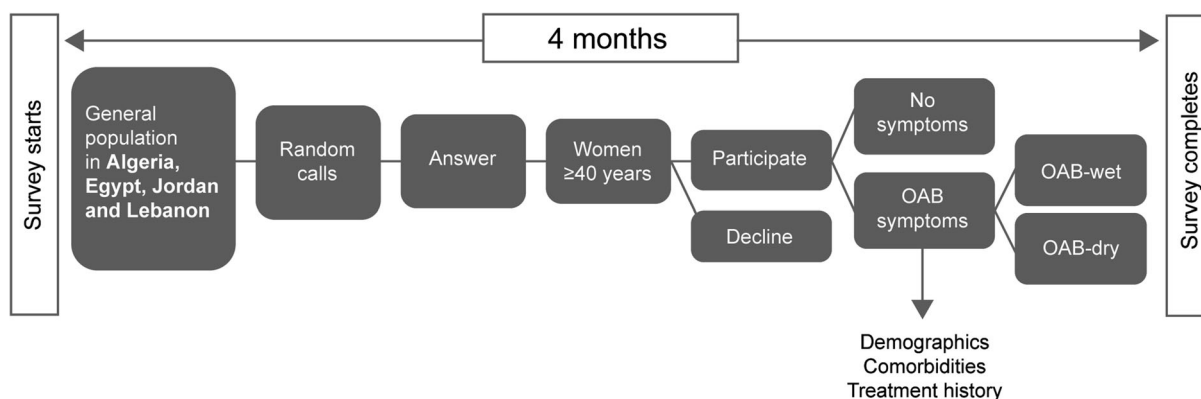


Fig. 1 Study design. OAB overactive bladder

4, 7 and 8) was 1128 (49.1%)—91.3% of those with OAB symptoms.

The prevalence of women with symptoms suggestive of OAB did not notably differ by age

category (Table 3), with a consistently high prevalence of OAB-wet among women with symptoms suggestive of OAB across age categories (n = 676 [91.1%] for 40–55 years and

Table 2 Prevalence of symptoms suggestive of OAB and OAB-wet by geographical location

Characteristic	Algeria (<i>n</i> = 573)	Egypt (<i>n</i> = 600)	Jordan (<i>n</i> = 561)	Lebanon (<i>n</i> = 563)	Total (<i>n</i> = 2297)
OAB score, mean (SD)	9.9 (8.4)	12 (9.9)	11.9 (9.2)	9.7 (8.8)	10.9 (9.2)
Overall prevalence of OAB ^a , <i>n</i> (%)	286 (49.9)	345 (57.5)	328 (58.5)	276 (49.0)	1235 (53.8)
Prevalence of OAB-wet ^b , <i>n</i> (%)	255 (44.5)	318 (53.0)	298 (53.1)	257 (45.6)	1128 (49.1)

OAB overactive bladder, SD standard deviation

^a OAB: Scoring overall ≥ 8 plus scores ≥ 1 on all urgency questions 2, 3 and 7 on the OAB-V8 questionnaire

^b OAB-wet: Women with OAB^a plus scores ≥ 1 on questions 4 and 8 on the OAB-V8 questionnaire

Table 3 Prevalence of symptoms suggestive of OAB and OAB-wet by geographical location and age

Age range, years	Algeria	Egypt	Jordan	Lebanon	Total
OAB ^a , <i>n</i> (%) ^b					
40–55	228 (49.9)	175 (61.2)	182 (60.9)	157 (48.9)	742 (54.4)
56–64	43 (53.1)	102 (56.0)	84 (54.9)	71 (47.7)	300 (53.1)
65–74	11 (39.3)	59 (52.7)	51 (56.7)	38 (52.8)	159 (52.6)
≥ 75	4 (57.1)	9 (45.0)	11 (57.9)	10 (47.6)	34 (50.7)
OAB-wet ^c , <i>n</i> (%) ^d					
40–55	206 (90.4)	160 (91.4)	165 (90.7)	145 (92.4)	676 (91.1)
56–64	37 (86.0)	96 (94.1)	73 (86.9)	69 (97.2)	275 (91.7)
65–74	8 (72.7)	54 (91.5)	49 (96.1)	34 (89.5)	145 (91.2)
≥ 75	4 (100)	8 (88.9)	11 (100)	9 (90.0)	32 (94.1)

OAB overactive bladder

^a OAB: Scoring overall ≥ 8 plus scores ≥ 1 on all urgency questions 2, 3 and 7 on the OAB-V8 questionnaire

^b Percent (%) was calculated with a denominator of the number of patients in each age group (see Table 1)

^c OAB-wet: Women with OAB^a plus scores ≥ 1 on questions 4 and 8 on the OAB-V8 questionnaire

^d Percent (%) was calculated with a denominator of the number of women with symptoms suggestive of OAB in each age group

n = 32 [94.1%] for ≥ 75 years; Table 3). Almost half of the women with symptoms suggestive of OAB reported at least one comorbidity (Table 4), with hypertension (*n* = 398 [32.2%]) and diabetes (*n* = 272 [22.0%]) being most commonly reported across all regions.

The treatment-seeking behavior of women with symptoms suggestive of OAB who were actively on therapy, who had been previously treated or had never been treated is summarized

by country and age group in Table 5. Overall, only 101 (8.2%) women with symptoms suggestive of OAB had been previously treated, and only 161 (13.0%) women were currently receiving therapy, ranging from 35 (12.7%) among women in Lebanon to 53 (15.4%) among women in Egypt. Most women with symptoms suggestive of OAB had never been treated (*n* = 918 [74.3%]). Almost half of those who had never been treated (*n* = 447 [48.7%])

Table 4 Comorbidities in women with symptoms suggestive of OAB by geographic location

Characteristic	Algeria (<i>n</i> = 286) ^a	Egypt (<i>n</i> = 345) ^a	Jordan (<i>n</i> = 328) ^a	Lebanon (<i>n</i> = 276) ^a	Total (<i>n</i> = 1235)
Any comorbidity, <i>n</i> (%)	132 (46.1)	207 (60.0)	143 (43.6)	122 (44.2)	604 (48.9)
Chronic constipation, <i>n</i> (%)	34 (11.9)	23 (6.7)	9 (2.7)	21 (7.6)	87 (7.0)
Hypertension, <i>n</i> (%)	68 (23.8)	149 (43.2)	105 (32.0)	76 (27.5)	398 (32.2)
Diabetes, <i>n</i> (%)	45 (15.7)	112 (32.5)	75 (22.9)	40 (14.5)	272 (22.0)
Depression, <i>n</i> (%)	27 (9.4)	18 (5.2)	7 (2.1)	21 (7.6)	73 (5.9)
Neurologic condition, <i>n</i> (%)	19 (6.6)	10 (2.9)	6 (1.8)	20 (7.2)	55 (4.5)

OAB overactive bladder

^a Total number of women with symptoms suggestive of OAB in each country

reported they were ‘not bothered by symptoms’ (Table 6). Of note, Algeria and Egypt had the highest proportion of respondents who ‘did not know it was treatable’ (*n* = 18 [9.9%] and *n* = 17 [6.5%], respectively) and thought it ‘part of normal aging’ (*n* = 20 [11.0%] and *n* = 28 [10.6%], respectively).

In addition, 320 (34.9%) women reported ‘other reasons’ (not specified) for not receiving treatment.

DISCUSSION

The results of this population-based telephone survey suggest there is a high prevalence (53.8%) of OAB symptoms among women aged ≥ 40 years in the Middle Eastern setting, with $> 90\%$ of women with symptoms suggestive of OAB also reporting OAB-wet symptoms. OAB prevalence estimates have been shown to vary considerably among studies, ranging from approximately 3–43% [4]. However, it is challenging to directly compare the results of this study with those of other prevalence studies, largely because of differences in methodology, e.g., inclusion of both men and women, differences in the definition of OAB, inclusion of individuals of varying age groups, and differences in treatment practices and patient perception across regions/countries.

Only a few studies have investigated the prevalence of OAB in the Middle East. One community-based study conducted by El-Azab et al. in Egypt (*n* = 1652 women) reported a prevalence of 40% for OAB symptoms [29], which is lower than the prevalence estimated in this study for Egypt (57.5%). A possible explanation for this difference may be the inclusion of younger women (≥ 20 years) in the El-Azab et al. study [29], and it is well-established that OAB symptoms are more common in individuals of advanced age [4].

In addition to age, other risk factors for OAB symptoms were common in this sample population of women. For example, the mean body mass index was 28.9 kg/m² (overweight), and most women were post-menopausal (60.8% of respondents). Additionally, approximately half of all women with symptoms suggestive of OAB experienced at least one comorbidity (48.9%), and diabetes was the second most common comorbidity overall (22.0% of respondents). These data are consistent with other studies, which have shown an association between OAB and multiple factors including age, body mass index, marital status, high parity rate, smoking, diabetes, previous hysterectomy and post-menopausal status [26, 35–37]. These results suggest that women in the Middle East have a range of risk factors that may increase their

Table 5 Treatment-seeking behavior of women with symptoms suggestive of OAB by geographical location and age (number and percentage in each age range)

Age range, years	Previously treated	Currently treated	Never treated	Missing	Total ^a
Algeria, <i>n</i> (%)					
40–55	10 (4.4)	31 (13.6)	155 (68.0)	32 (14.0)	228
56–64	3 (7.0)	3 (7.0)	23 (53.5)	14 (32.6)	43
65–74	1 (9.1)	2 (18.2)	4 (36.4)	4 (36.4)	11
≥ 75	1 (25.0)	0 (0)	0 (0)	3 (75.0)	4
Egypt, <i>n</i> (%)					
40–55	13 (7.4)	20 (11.4)	142 (81.1)	0 (0)	175
56–64	8 (7.8)	18 (17.6)	76 (74.5)	0 (0)	102
65–74	6 (10.2)	11 (18.6)	42 (71.2)	0 (0)	59
≥ 75	2 (22.2)	4 (44.4)	3 (33.3)	0 (0)	9
Jordan, <i>n</i> (%)					
40–55	16 (8.8)	24 (13.2)	142 (78.0)	0 (0)	182
56–64	11 (13.1)	5 (6.0)	66 (78.6)	2 (2.4)	84
65–74	4 (7.8)	7 (13.7)	40 (78.4)	0 (0)	51
≥ 75	0 (0)	1 (9.1)	10 (90.9)	0 (0)	11
Lebanon, <i>n</i> (%)					
40–55	14 (8.9)	19 (12.1)	124 (79.0)	0 (0)	157
56–64	7 (9.9)	9 (12.7)	55 (77.5)	0 (0)	71
65–74	4 (10.5)	7 (18.4)	27 (71.1)	0 (0)	38
≥ 75	1 (10.0)	0 (0)	9 (90.0)	0 (0)	10
Total, <i>n</i> (%)	101 (8.2)	161 (13.0)	918 (74.3)	55 (4.5)	1235 (100)

OAB overactive bladder

OAB: Scoring overall ≥ 8 plus scores ≥ 1 on all urgency questions 2, 3 and 7 on the OAB-V8 questionnaire

Similar to other studies investigating treatment-seeking behavior [23], the numbers of women who had never been treated, were actively on therapy and had been previously treated are presented

^a Total number of women with symptoms suggestive of OAB in each country

likelihood of experiencing OAB symptoms. These findings are in line with those from a global study, which estimated a higher prevalence of OAB in Asia compared with Europe, Africa, and North and South America [3].

Despite the high prevalence of OAB symptoms and $> 90\%$ of women having symptoms of OAB-wet, our study revealed that only 13% were currently receiving treatment and 8% were

previously treated; 74% of respondents had never received treatment, with the most common specified reason being 'not bothered by symptoms.' A previous survey of six European countries reported a treatment rate of approximately 27% and that the most common reason for not seeking help, for both men and women (61% and 56%, respectively), was the belief that no effective treatment was available [4]. In

Table 6 Non-treatment-seeking behavior on women with symptoms suggestive of OAB in Middle Eastern countries who reported being ‘never treated’ ($n = 918$)

	Not bothered by symptoms	Did not know OAB is treatable	Considered part of normal aging	Could not reach healthcare professional	Other reasons	Missing
Algeria ($n = 182$), n (%)	75 (41.2)	18 (9.9)	20 (11.0)	5 (2.7)	54 (29.7)	22 (12.1)
Egypt ($n = 263$), n (%)	113 (43.0)	17 (6.5)	28 (10.6)	3 (1.1)	115 (43.7)	26 (9.9)
Jordan ($n = 258$), n (%)	140 (54.3)	5 (1.9)	16 (6.2)	0 (0)	86 (33.3)	26 (10.1)
Lebanon ($n = 215$), n (%)	119 (55.3)	3 (1.4)	13 (6.0)	2 (0.9)	65 (30.2)	36 (16.7)
Total ($n = 918$), n (%) ^a	447 (48.7)	43 (4.7)	77 (8.4)	10 (1.1)	320 (34.9)	110 (12.0)

OAB overactive bladder

OAB: scoring overall ≥ 8 plus scores ≥ 1 on all urgency questions 2, 3 and 7 on the OAB-V8 questionnaire

^a Total sum of all respondents by category (percentage of overall respondents)

addition, a small study conducted in Egypt ($n = 91$) showed that only 4% of women with UUI sought medical advice [29].

It has previously been suggested that many individuals with OAB are reluctant to seek medical care, a characteristic that has been attributed to social stigma and/or embarrassment associated with an inability to control the bladder; these individuals often endure the inconvenience and unpleasantness of symptoms [4]. UUI in particular may have a severe impact on HRQoL, self-esteem, relationships and fear/anxiety. The severity of OAB symptoms appears to be associated with the adoption of non-medical coping strategies (e.g., controlling fluid intake and use of pads) rather than consulting a healthcare professional [38, 39].

For individuals with OAB symptoms, the impetus to seek medical treatment may be multifactorial, e.g., the number of and/or bother from OAB symptoms and the age of the

patient [5]. It also appears that patients often consider the condition a normal part of aging or that they are unaware that effective treatment is available [4, 40–42]. Indeed, there are currently several treatment modalities available, including education and lifestyle modification plus pharmacotherapy with oral antimuscarinic or beta-3 adrenoceptor agonist agents [21, 22].

In 2018, the population in the Middle East region approached 450 million, with approximately 35% resident in Algeria, Egypt, Jordan and Lebanon [43]. Considering the significant impact that OAB symptoms can have on HRQoL, these findings suggest that there is an unmet medical need in a significant number of women in the Middle East region. Strategies to improve treatment-seeking behavior (e.g., through reassurance, education and addressing the stigma associated with urinary symptoms) may therefore improve the management and

health outcomes of women in the Middle East with OAB.

Limitations

In this cross-sectional survey, all data collected on symptoms were based on self-report without medical validation. In this disease area, the diagnosis of conditions involving lower urinary tract symptoms, including OAB, is often driven by patient self-report. The under-reporting of urinary symptoms has been observed in published research due to social stigma from inability to control the bladder [40–42]. Therefore, participants may not have been comfortable sharing their symptoms with interviewers. However, the CATI method is considered more anonymous than a face-to-face interview; incontinence was assessed by responses to the OAB-V8 questionnaire meaning that women did not have to explicitly describe their symptoms. The methodology used here may have allowed for participants to be more open about their urinary symptoms without the worry of social stigma.

Of all the households contacted, 7.1% were identified as eligible and agreed to participate in the study. As participants were informed that it was a health-related telephone survey prior to consenting it is possible that unwell women were more engaged and likely to agree to participate in this survey (perhaps as an outlet to discuss their symptoms) compared with women who had good health. Additionally, most women who participated were aged 40–55 years (59.3%), and thus the generalizability of the results is somewhat limited to this age category.

Since self-reported information is susceptible to recall bias, there may also have been systematic errors caused by differences in the accuracy of the recollections retrieved by participants (regarding symptom bother during the past 4 weeks). In addition, some symptoms may not have been fully recognized by participants as being suggestive of OAB, a particular concern in developing countries. Furthermore, data for some demographic characteristics, including a history of gynecologic surgeries and deliveries associated with an increased risk of OAB

symptoms, were not available in this survey. Finally, barriers to treatment and coping strategies were not explored in this study, nor was the compliance with treatment in those receiving current therapy.

CONCLUSIONS

Approximately 50% of women aged ≥ 40 years in the Middle Eastern setting had symptoms suggestive of OAB. The majority of these women described symptoms suggestive of urinary incontinence, and most women had never received treatment. These data suggest an unmet medical need and highlight the requirement for strategies to improve treatment-seeking behavior in this region.

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Compliance with Ethics Guidelines. The study was conducted with ethical approval and informed consent, and in accordance to Helsinki Declaration. The ethics approval procedure differed in each country. The review boards for each country and reference numbers are as: (1) Egypt: Central IRB at Egyptian Ministry of Health; 15–2018/19; (2) Jordan: IRB at School of Medicine, University of Jordan; 1692/2018/67; (3) Algeria: IRB at EHU Oran Algeria and Central IRB notification to Algerian Ministry of Health; 11–07-2018; (4) Lebanon: IRB at Lebanese Hospital Geitaoui University Medical Centre; 2018-IRB-010. No patients were involved in the study trial design or dissemination of results.

Data Availability. Researchers may request access to anonymized participant level data, trial level data and protocols from Astellas sponsored clinical trials at www.ClinicalStudyDataRequest.com. For the Astellas criteria on data sharing see: <https://ClinicalStudyDataRequest.com/Study-Sponsors/Study-Sponsors-Astellas.aspx>.

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