ORIGINAL ARTICLE

Prevalence of overactive bladder syndrome (OABS) among women with gynaecological problems and its risk factors in a tertiary hospital, Negeri Sembilan, Malaysia: Implication for primary healthcare providers

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Abstract

Objective: The objective of this paper was to determine the prevalence of overactive bladder syndrome (OABS) and its risk factors among patients with other gynaecological problems.

Methods: This study was conducted on women aged more than 18 years who attended the gynaecology clinic for various diagnoses other than urinary problems at a tertiary hospital in Negeri Sembilan, Malaysia, for a period of 6 months. Data on patient's profile, symptoms and risk factors for overactive bladder (OAB) were prospectively collected using a structured questionnaire adapted from ICIQ (international consultation on incontinence questionnaire). Exclusion criteria included patients with confirmed diagnosis of stress incontinence or OAB, neurological impairment, gynaecological malignancy and those with a previous history of pelvic radiation. Chi-square test and logistic regression test were used in the statistical analysis. We presented the odds ratio (OR) and 95% confidence interval for each of the OAB symptoms with *p*-value of 0.05.

Results: The prevalence of OAB among the patients (n = 573) in this study was 19.1%. History of giving births to macrosomic babies and presence of utero-vaginal prolapse (UVP) were shown to be significantly associated with OAB in the multivariate analysis. Other factors were advanced age, high parity and menopausal for more than 5 years. More than half of the patients with the symptoms of OAB did not seek treatment, as they did not think it is necessary.

Conclusion: It is found that the prevalence of OAB is similar with many other studies conducted elsewhere. It was found to be multifactorial, but was highly significantly related with the presence of UVP, especially cystocoele and history of giving births to macrosomic babies.

Introduction

Overactive bladder (OAB) is defined as frequent urination with or without urge incontinence and is usually associated with frequency and nocturia in the absence of an infection or other pathological conditions.[1] It is a common and distressing medical condition that can severely affect patient's quality of life.[2]

The prevalence of OAB varies among populations, as the number of women who seek help and report the symptoms depends on the social acceptance of incontinence. As a result of ignorance, embarrassment and sometimes believing that incontinence is somewhat 'normal' due to birth and ageing, many women suffer for years before seeking medical treatment.[3] OAB generally accounts for 11%–19% of overall incidence of incontinence worldwide.[4] However, a study in the United States found that the incidence of OAB was high: 48.3% in women and 60.5% in men.[5] Studies in Asia also quoted almost similar prevalence of OAB, though only one out of five patients would usually seek treatment due to reasons mentioned earlier.[6]

The symptoms of OAB are primarily due to the involuntary contractions of the detrusor muscle during the filling phase of the micturition cycle. It is also termed detrusor overactivity and is mediated by acetylcholine-induced stimulation of bladder muscarinic receptors.[8]

There are many risk factors associated with OAB, such as obesity, history of pelvic organ prolapse, multiparity, advanced age and menopause.[9] Other conditions that can stimulate involuntary contractions of bladder muscles must also be considered, such as neurological conditions, medication use, urinary infection, abnormalities in the bladder, etc.[10]

The principle management of OAB includes conservative, medical and surgical options. Studies have shown that conservative management that includes behavioural modification (bladder training, avoidance of bladder irritants and management of fluid intake) with pelvic floor exercise plays significant roles in managing OAB.[11] Medical therapy is helpful in patients who are resistant to conservative management. The anti-cholinergic drug is a well-accepted pharmacological treatment for OAB, but the side effects have resulted in low compliance as proven by a study conducted in the United States, where 81.8% of women discontinued drug treatment after less than 6 months, partly due to the side effects of anti-cholinergic therapy.[12] Other modalities like sacral neuromodulation, tibial nerve stimulation or intermittent botulinum toxin injection into the detrusor muscles are also practised in patients with refractory OAB.[13] Surgical intervention like bladder reconstruction i.e. cystourethroplasty or bladder augmentation, is usually reserved as the last option, as the morbidities are more likely to cause unfavourable consequences.[14]

The objectives of this study were to determine the prevalence of OAB in women who presented with other gynaecological problems, to study its associated risk factors and to establish the factors that prevent women from volunteering to step forward for therapy.

Methods

A cross-sectional study was conducted among the women who attended the gynaecology clinic of Tuanku Jaafar Hospital, Negeri Sembilan, Malaysia, from December 2011 to May 2012. A universal sampling was used where all patients older than 18 years who consented were recruited in the study. Patients who were diagnosed with or already treated for stress or OAB, neurological impairment or gynaecological malignancy and those with a previous history of pelvic radiation were excluded from the study.

Symptoms suggestive of OAB were assessed using a self-administered OAB-screener questionnaire as adapted from the ICIQ (international consultation on incontinence questionnaire) and the permission for its use was granted from Pfizer International.[15] The questionnaire was also translated into the national language.[16] Additional questions on the factors prohibiting patients with OAB symptoms from seeking treatment was structured and validated (Cronbach alpha: 0.71) for this particular study.

The diagnosis of OAB was then made by exclusion after further assessment including bedside examination to rule out stress incontinence and urinalysis to rule out urinary tract infection.

Socio-demographic data of the patients including age, race, body mass index (BMI), parity, educational background, socio-economic status, professions and duration of menopause, were documented. The subjects who had difficulty in answering any questions were assisted by the first author during the survey.

The sample size was calculated using a sample size calculator at confidence level of 95% and confidence interval of 4. Appropriate statistical tests were used where necessary: chi-square test to compare the difference between women with or without OAB symptoms and logistic regression for the univariate and multivariate analysis. We presented the odds ratio (OR) and 95% confidence interval for each of the OAB symptoms. The level of significance was set at a *p*-value of 0.05. All data were entered and analysed in an SPSS 20.0 database for Windows (SPSS, Inc., Chicago, IL).

Results

A total of 573 patients were included in the study, and participants' mean age was 40.41 ± 12.05 years. The mean BMI of the participants was 27.4 ± 5.9 kg/m^2. More than two-thirds of the study population had BMI higher than the normal range. The characteristics of the participants are summarised in Table 1.

Table 1. Demographics of participants, *n* = 573

Variables	Frequencies (*n*)	Percentage (%)
Age (years)		
18–30	149	26.0
31–40	135	23.6
41–50	174	30.4
51–60	87	15.2
More than 61	28	4.9
BMI (kg/m²)		
Underweight	23	4.0
Normal	113	19.7
Overweight	182	31.8
Obese	255	44.5
Parity		
Nulliparous	163	28.4
Primiparous	76	13.3
Multiparous	168	29.3
Grand multiparous	166	29.0
Mode of delivery		
SVD	357	87.1
Vacuum	1	0.2
Forceps	2	0.4
LSCS	50	12.2
Previous pelvic surgery		
Yes	52	9
No	521	91
Previous delivery to a macrosomic baby		
Yes	22	3.8
No	551	96.2
Menopausal state		
Yes	111	18.8
No	465	81.2
Duration of menopause (years)		
<5	77	79.3
>5	33	29.7
Presence of UVP		
Stage 1 and 2	13	2.3
+ Cystocoele	10	77
Co-morbidities		
Yes	102	17.8
Hypertension	65	63.7
Diabetes mellitus	37	36.3

Table 2. Identified risk factors of OAB among the study population using univariate analysis

Variables		OAB		Chi-square	Odds ratio (95% CI; lower–upper)	*p*-value
		No, *n* (%)	Yes, *n* (%)			
Age group (years)	<40	245 (52.9)	39 (35.5)	10.841	2.05 (1.33–3.15)	0.001**
	>40	218 (47.1)	71 (64.5)			
BMI	<30	115 (24.8)	21 (19.1)	1.622	1.40 (0.83–2.36)	0.200
	>30	348 (75.2)	89 (80.9)			
Parity	≤1	209 (45.1)	30 (27.3)	11.671	2.19 (1.39–3.47)	<0.001**
	≥2	254 (54.9)	80 (72.7)			
Sub-analysis of parity	0	143 (30.9)	20 (18.2)	8.006	-	0.046**
	1	66 (14.3)	10 (9.1)			
	2-4	133 (28.7)	35 (31.8)			
	≥5	121 (26.1)	45 (40.9)			
Menopause	No	380 (82.1)	85 (77.3)	1.3393	1.35 (0.81–2.23)	0.247
	Yes	83 (17.9)	25 (22.7)			
Duration of menopause	<5 years	40 (47.6)	5 (18.5)	7.1781	4.00 (1.38–11.56)	0.007**
	>5 years	44 (52.4)	22 (81.5)			
Co-morbidity	No	391 (84.4)	80 (72.7)	8.3466	2.04 (1.25–3.32)	0.004**
	Yes	72 (15.6)	30 (27.3)			
Previous pelvic surgery	No	421 (90.9)	100 (90.9)	0.	1.00 (0.48–2.06)	0.994
	Yes	42 (9.1)	10 (9.1)			
UVP	No	459 (99.1)	101 (91.8)	21.4669	10.23 (3.09–33.86)	< 0.001**
	Yes	4 (0.9)	9 (8.2)			
Occurrence of pregnancy	No	153 (33.0)	21 (19.1)	8.1852	2.09 (1.25–3.50)	0.004**
	Yes	310 (67.0)	89 (80.9)			
Mode of delivery	SVD	272 (87.7)	71 (79.8)	5.1703	-	0.160
	Vacuum	0	1 (1.1)			
	Forceps	1 (.3)	1 (1.1)			
	LSCS	35 (11.3)	12(13.5)			
Previous delivery to a macrosomic baby	Yes	11 (3.6)	11 (12.5)	10.3992.	0.26 (0.11–0.62)	0.001**
	No	297 (96.4)	77 (87.5)			

**$p<0.05$

The study population consisted of women from different parity, and majority of them had delivered vaginally. Almost one-third of the population had undergone lower segment Caesarean section (LSCS), while a small number of women underwent instrumental deliveries, i.e. vacuum and forceps. It was also identified that approximately a small percentage of the subjects had prolonged labours or gave births to macrosomic babies. Other factors that were analysed for its possible association with OAB were pelvic surgery for various benign causes; menopause and its duration, presence of co-morbidities such as hypertension and diabetes and utero-vaginal prolapse of stage 1 and 2 of which three-quarters were associated with the presence of cystocoele. The findings are shown in Table 2.

The prevalence of OAB in this study population was 19.1%. Univariate analysis showed that identified risk factors like advanced age group, higher parity, menopausal status of more than 5 years, presence of co-morbidities, presence of utero-vaginal prolapse, occurrence of pregnancy and a history of vaginal births to macrosomic babies were statistically significant in the association with OAB. High body mass index

(BMI), menopausal status and history of pelvic surgery otherwise were not significantly associated with OAB. The summary of the chi-square test and univariate analysis of the OAB risk factors is illustrated in Table 2.

A binary logistic regression stepwise (Wald) test was used to identify the most significant risk factors associated with OAB. It identified the presence of utero-vaginal prolapse (UVP; *p*-value: 0.001, OR: 8.13 [CI: 2.40–27.56]) and giving birth to macrosomic baby (*p*-value: 0.001, OR: 3.62 [CI: 1.47–8.88]) as the most significant associated risk factors for OAB. Other factors, i.e. age, higher parity, menopausal status, presence of co-morbidities and occurrence of pregnancy were found not significant.

The other objective of this study was to determine the reasons prohibiting women from seeking treatment for OAB. Only 95 out of the 110 patients with positive signs of OAB responded to the questions. More than half of the respondents did not seek treatment for OABs, as they thought that it was not a problem. About one-fifth of them believed that OAB was temporary and it would improve with time. A small number of respondents were ashamed to admit to the problem and thought OAB was part of ageing, thus not worth seeking treatment. Table 3 illustrates the reasons that prohibit patients from seeking advice or treatment for OAB symptoms.

Table 3. The factors prohibiting patients from seeking advice for OAB symptoms, *n* = 95

Reasons for not volunteering for OAB treatment	*n* (%)
Don't think it's a problem	53 (55.8)
Thought it is temporary and will get better	19 (20.0)
Feel ashamed to admit having the problem	12 (12.6)
Assumed it is part of a natural aging process	11 (11.6)

Discussion

The present study showed that 19.1% of the 573 participants included in our study experienced OAB. This was similar to another study that was conducted earlier in the northern part of Malaysia.[7] The rates of OAB vary between 11.8% and 48.4% in the European countries and the United States but has lower prevalence in Asian countries such as Korea and Taiwan, which was between 6.0% and 19.8%.[8,9,17,18] The use of a standard diagnostic questionnaire allows a reliable evaluation of women with possible OAB when the risk factors are being determined. However, the lower prevalence among Asian women elucidates the possibility of under-reporting due to various social or psychological reasons.

Many factors have been established as the confounding risks to the development of OAB. UVP has been identified as the most significant factor associated with OAB by many community-based studies including ours.[9,19] The pathophysiology; however, remains unclear. It has been postulated that bladder outlet obstruction by the herniating organs in UVP exerts pressure onto the bladder wall and stimulates the bladder stretch receptors inducing OAB symptoms. Treatment of UVP thus has resulted in the improvement of symptoms of OAB.[9]

Parity has also been reflected in many observational studies to have a relation with OAB. Higher parity described as more than two seemed to have more significant relationship with its incidence.[10,20] It has been demonstrated that 72% of women who were pregnant with high parity (more than two) had higher incidence of OAB (p = 0.001). A hypothetical explanation describing the possible neuropathic changes increasing the sensitivity of the detrusor muscles of the bladder during its filling sensation in pregnancy can thus be stipulated.[21]

It has also been reported that women who had vaginal births show stronger association with the incidence of OAB, which is consistent with many other studies elsewhere.[22] Repeated vaginal deliveries is believed to cause damage to the integrity of pelvic organ-supporting structures, weakening its tensile strength and thus increasing the chance of UVP, which has been significantly associated with OABs.[23] This seems to be much more affected by deliveries of macrosomic babies. The postulation of disequilibrium in tissue remodelling, patterning and repair of the supporting structures due to repeated and severe injuries should be considered.

Advanced age has been consistently identified as a risk factor of OAB in many studies conducted in various geographical

locations.[6,7,24] This may also be true in this study, as there was a suggestion of its association, but further research is required to ascertain the finding.

Another commonly associated risk to OAB is menopausal status.[24,25] Our study; however, does not show its significant association with menopausal status of the women unless the occurrence of menopause is more than 5 years (OR: 4.00 (CI: 1.38–11.56) and *p*-value: 0.01).

Presence of co-morbidities such as hypertension and diabetes mellitus has also been shown to affect the incidence of OAB, though the risk ratio varies i.e. diabetes mellitus has greater impact on the condition as compared with hypertension.[21,23] This explicates the hypothesis of autonomic neuropathy as a result of diabetic complication affecting function of the bladder. The association of hypertension with OAB is however uncertain though it has been reported that the use of diuretics or complication like stroke could be the triggers for the urinary problem. In current study, women with co-morbidities showed a significant association with OAB symptoms. It corresponded with the findings of others, but further analysis of possible correlation variation to each condition is required.

Obesity has been demonstrated to have an effect on OAB, perhaps secondary to increased pressure on the bladder and greater urethral mobility as well as impairment of blood flow and nerve innervations of the bladder.[26] Nevertheless, there is no evidence to support that weight loss improves symptoms of OAB, and there were contradicting findings in other studies in relation to BMI and OAB.[26] This study also did not show an association between obesity and OAB.

We also analysed the possibility of under-reporting leading to lower prevalence among women in Malaysia. It was found that none of the women volunteered any symptoms of OAB to their attending doctors though being seen for other health problems. The reason was consistent with a possibility of lack of awareness about the condition and its treatment among Malaysian women. Almost half of them did not regard OAB as a problem thus felt it was not necessary to seek treatment. Another study conducted in the northern part of Malaysia found only 23% of patients with OAB actually sought help for this problem.[7] This is similar to what had been observed in China, where more than 30% of women felt embarrassed to consult doctors about the problem and approximately 24% perceived it as natural ageing process.[27] This explains the lower prevalence of OAB reported among Asian population as compared with European women. The cultural background probably influences their perception towards the condition, thus affecting the negative decision on seeking help or treatment.

As most women would initially approach primary care physicians or their 'family doctors' for health reasons, it is important to acknowledge the significant prevalence of OAB, which hopefully will encourage early screening of the symptoms. Many affected women are not well educated about the condition and its easily available treatment; thus, it is important that the primary healthcare givers are trained to be able to identify the problems early and increase awareness among women. It is more cost effective to initiate conservative treatment if OAB is suspected before referral to urologists for expensive specific assessment and specialised treatment.

This study has few limitations, which include the selection of subjects who may not be representing the true prevalence in the actual population. Answers to the survey may also be inaccurate, as it depends on the patient's ability to recall. Perhaps a study in a general population with an objective assessment like cystometry to diagnose OAB should be conducted to improve the study outcome. Despite the limitation, it may still serve as a guideline for healthcare providers to be more vigilant in increasing awareness about OAB among women, detecting symptoms of OAB in the patients attending their clinic and administering an appropriate treatment to improve their quality of life.

Conclusion

OAB is a highly prevalent condition among women with other health conditions, including those in the reproductive age. The risk factors of OAB in Malaysian women appear to be similar to women of other continents including advanced age, duration of menopause and higher parity. This study

showed that vaginal births to macrosomic babies and presence of UVP are two strong associated factors of OAB, and thus, perhaps, could be used as predictors in women. It also showed that the majority of women neglect to seek treatment due to lack of awareness about the condition or feeling of shame. By identifying those at risk, help can be offered and tailored to their needs even though if the symptoms are not volunteered by the patients.

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