

## **The Psychological Impact of Overactive Bladder: A Systematic Review**

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**Published version :** [J Health Psychol.](#) 2016 Jan;21(1):69-81. doi:

**10.1177/1359105314522084. Epub 2014 Mar 2.**

### **Abstract**

This review aimed to provide an overview of the current research on the psychological impact of overactive bladder (OAB). A systematic search yielded thirty-two papers. It was found that people with OAB tended to have greater levels of depression, anxiety and embarrassment/shame; difficulties with social life, impact on sleep and sexual relationships; and a lower quality of life than people without OAB. A psychological impact on family members was also found. Psychological health should be considered an important aspect of managing OAB and further research is required to determine how best to provide psychological care and support in this area.

**Keywords:** systematic review, illness, coping, clinical health psychology, psychological distress

### **Introduction**

Overactive Bladder (OAB) is a condition characterized by urinary urgency, with or without urge incontinence, usually with urinary frequency and nocturia (Abrams et al., 2003). The prevalence of OAB has been estimated at between 16% and 17.5% of the population and is set to rise to around 20.1% by 2018 (Lee et al., 2013). The condition is increasingly pervasive with age, with prevalence in over 75 year olds estimated at 42% in males and 31% in females (Chu, Smith & Uchida 2009). In light of an ageing population this presents a clear clinical significance.

OAB is manifestly bothersome or debilitating on a physical level but there is also evidence to suggest that the symptoms associated with OAB are detrimental to psychological well-being (Tooze-Hobson, 2010). Studies evaluating quality of life (QoL) reveal that OAB participants score lower on mental health sub-dimensions of QoL questionnaires (Bartoli, Aguzzi & Tarricone, 2010). Further exploration into the psychological impact of OAB has shown that it is associated with elevated levels of anxiety and depression (Coyne et al 2011a), and that the specific emotions experienced by individuals with OAB include embarrassment, low self-esteem and self-blame (Nicolson, Kopp, Chapple & Kelleher, 2008). These findings suggest that OAB may have substantial implications for mental health, indicating a need for increased attention to its wider-reaching effects.

Very few review papers have addressed the psychological impact of OAB. One review examined randomised control trials of anticholinergic drugs typically used to treat OAB (Khullar, Chapple, Gabriel & Dooley, 2006). Meta-analyses of results demonstrated that, overall, patients receiving treatment for OAB had better health-related QoL (HRQoL) than those taking a placebo. This review suggests that HRQoL can be improved by alleviating symptoms of OAB – providing some evidence of negative psychological consequences of OAB. Their review examines the effects of OAB in specific clinical samples, however, not the general population or outside of drug intervention. Additionally, anticholinergic medication may not completely eradicate the symptoms of OAB, and may result in side effects which themselves affect QoL. It therefore does not necessarily provide an indication of how QoL differs between individuals with OAB and those without.

Only one review has compared measures of psychological well-being in individuals with OAB and those without. Bartoli et al's (2010) review examined the impact of OAB and

urinary incontinence (UI) on QoL. It found that people with OAB or UI had significantly worse QoL scores than healthy controls, but that there was no consensus on the aspects of QoL most affected. Additionally, it found that people with incontinence had worse QoL than those who were continent, and that urge urinary incontinence impaired QoL to a greater extent than stress urinary incontinence (SUI) or mixed urinary incontinence (MUI).

In focusing their review on QoL, Bartoli et al. omitted to include papers assessing other psychological dimensions, such as anxiety and depression, or the psychological consequences of difficulties associated with OAB such as sleep deprivation.

It therefore seems useful to systematically review studies which have examined the psychological impact of OAB, including studies which assess a range of psychological dimensions and only those which specifically relate to OAB. It would also be useful to also include qualitative studies as they allow open-ended expression of experiences, so may provide further, richer insights into the psychological impact of OAB in patients' lives that cannot be captured by quantitative questionnaires.

## **Method**

### *Search strategy*

Electronic databases (Web of Knowledge, PsycInfo, Medline and Cinahl) were searched for published articles evaluating the impact of OAB on psychological well-being. Searches were conducted using the following search terms (\* indicates truncation): overactive bladder, OAB : psych\*, well-being, depression, anxiety, work, relationship\*, mood, mental health, self-esteem, sleep, sex\*, pain, quality of life. A bibliographic review of found papers was also conducted.

### *Study selection*

Studies were included if they met the following criteria: 1) published in a peer-reviewed journal in English, 2) participants were aged 18 or over, 3) the study focussed on OAB or reported separate results for OAB if examining a range of urinary difficulties, 4) the study examined the impact of OAB on an aspect of psychological well-being. Studies were excluded if they met any of the following exclusion criteria: 1) the study focussed on the impact of medication/treatment on quality of life in OAB, 2) the study was an evaluation of questionnaire use, 3) the study did not include any aspect of psychological well-being in its objectives, 4) the study was a review or theory paper.

#### *Study quality assessment*

The quality of all studies was assessed using a modified version of the Downs and Black (1998) checklist. The checklist had 15 criteria (10 for qualitative studies), each of which were answered using 'yes' or 'no', yielding a possible score out of 15 for quantitative studies and 10 for qualitative studies (see Appendix). Overall quality was calculated as a percentage of the possible total score. All the papers were evaluated by two independent researchers, and inter-rater reliability was found to be 84 per cent, indicating strong positive inter-rater reliability. Most disagreements were on external validity (whether the sample used was representative of the population and how well the paper described the principle confounders). Any discrepancies between ratings were discussed and a shared decision reached.

#### *Data extraction*

Information collected from studies included the country in which the study was conducted, research design, focus of the study, sample, measures used, and results.

#### *Data synthesis*

Due to the heterogeneity of the measures used and main focuses of the studies, a meta-analysis was not appropriate so the data were synthesised using a textual narrative approach (Lucas et al, 2007). This method allows qualitative and quantitative studies to be examined together and is particularly suited to reviews which aim to describe the scope of the existing literature. Sub-groups of studies are identified, and commentaries of the studies (including study characteristics and findings) are produced within these subgroups. The commentaries are then synthesised for each subgroup in order to draw conclusions.

#### *Details of included and excluded studies*

Electronic searches generated 3699 results. A summary of numbers of papers included/excluded is shown in Figure 1 below. The main reasons for exclusion were that the paper did not include an evaluation of an aspect of psychological well-being in its objectives, did not report separate results for OAB and the paper evaluated the impact of a treatment only. Thirty-two papers were included in the review.

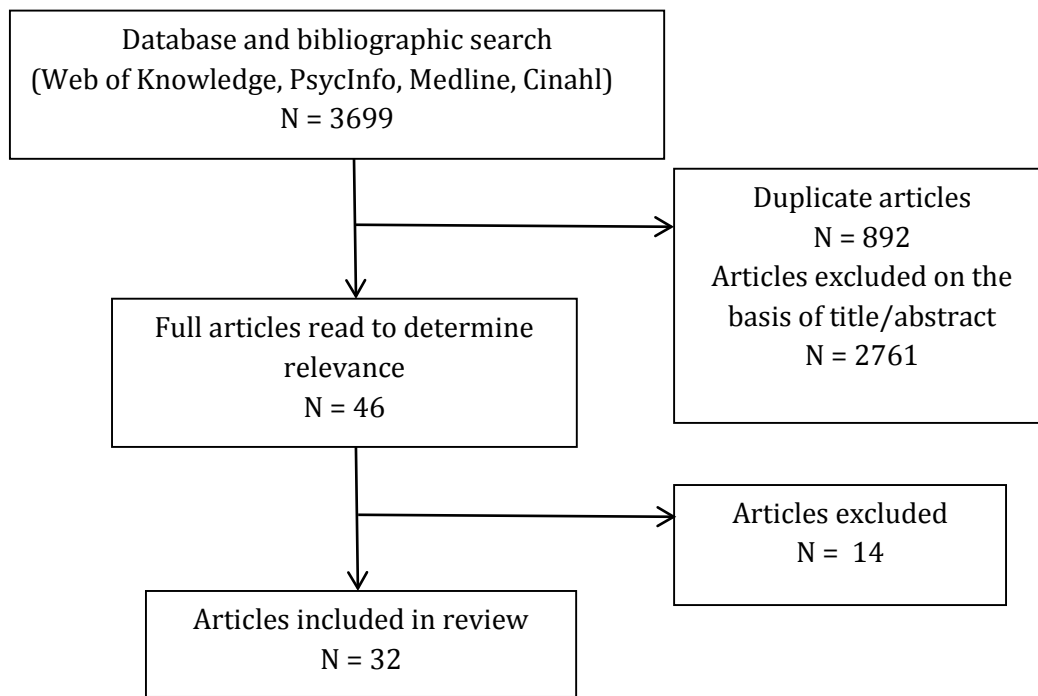


Figure 1. Summary of search results

## **Results**

The search yielded thirty-two papers. The main characteristics of these studies are summarised in Table 1 (In Appendix).

### **Characteristics of the research on the impact of OAB**

#### *Overview of methodological quality of the research*

Using the modified Downs and Black (1998) checklist, overall quality was found to range from 53% (Tomoe et al., 2005) to 100% (Anger et al., 2011; Coyne, Matza & Brewster-Jordan, 2009; Sut et al., 2012), although the majority of papers had a quality rating of 86% or over, suggesting that overall the studies were of good quality. All studies clearly described their aims, outcomes, and the clinical status of their participants. However, only one quantitative study provided a power calculation and nine did not report actual p-values.

#### *Study design*

All studies were cross-sectional. Eight of these were case-control studies (Chiaffarino, Parazzinia, Lavezzaric & Giambanco, 2003; Coyne et al., 2004; Coyne et al., 2008; Knight, Luft, Nakagawa & Katzman, 2011; Liberman et al., 2001; Oh & Ku, 2007a; Oh & Ku, 2007b; Stewart et al, 2003). In twenty-one studies participants were assessed on their urinary symptoms and then categorised into OAB and comparison groups. Sixteen of these established a non-OAB subgroup (Bunyavejchevin, 2006; Bunyavejchevin & Veerananarapanich, 2005; Coyne et al., 2011a; Coyne et al., 2011b; Dmochowski & Newman, 2007; Milsom, Kaplan, Coyne, Sexton & Kopp, 2012; Newman & Koochaki, 2011; Safarinejad, 2009; Sexton et al., 2011; Sut, Kaplan, Sut & Tekbas, 2012; Teloken et al 2006; Tomoe, Sekiguchi, Horiguch & Toma, 2005; Van der Vaart, de Leeuw, Roovers & Heintz, 2002; Vaughan et al., 2011; Ozgur Yeniel et al., 2012; Yoo et al., 2011). Five studies did not identify a non-OAB group: three comparing OAB wet with OAB dry (Coyne et al., 2007; Currie et al., 2006; Irwin, Milsom, Kopp, Abrams & Cardozo, 2005) and two comparing OAB with SUI (Oh et al., 2008; Wattanayingcharoenchai et al., 2007).

Three studies employed a qualitative focus group format (Anger et al., 2011; Coyne et al., 2009 and Nicolson, Kopp, Chapple & Kelleher, 2008). Participants in two of these comprised OAB patients (Anger et al., 2011 and Nicolson et al., 2008). In the remaining study participants were OAB patient/family member or significant other dyads (Coyne et al., 2009).

#### *Sample characteristics*

Sample sizes ranged from 18 (Nicolson et al., 2008) to 20,000 (Milsom et al., 2012).

Seventeen studies used female only samples (Anger et al, 2011; Bunyavejchevin, 2006; Bunyavejchevin & Veerananarapanich, 2005; Chiaffarino et al.,2003; Coyne et al., 2004; Coyne et al., 2007; Dmochowski & Newman, 2007; Knight et al., 2011; Newman & Koochaki, 2011;

Oh & Ku, 2007a; 2007b; Oh et al., 2008; Safarinejad, 2009; Sut et al., 2012; Tomoe et al., 2005; Wattanayingcharoenchai et al, 2007; Van der Vaart, de Leeuw, Roovers & Heintz, 2002; Ozgur Yeniel et al., 2012). No studies used male only samples.

The average age of participants ranged from 21.74 years (Ozgur Yeniel et al., 2012) to 70.1 years (Sexton et al., 2011), although only five studies had an average age of less than 40 years (Knight et al., 2011; Safarinejad, 2009; Teloken et al, 2006; Van der Vaart et al., 2002; Ozgur Yeniel et al., 2012).

### *Summary*

The majority of studies were of good quality. Most were cross-sectional, questionnaire based studies however three were qualitative. Sample sizes varied widely and a number used female only samples. The majority of studies used participants with an average age of over forty years.

### Overview of findings

The areas the studies investigated broadly fell into nine groups: depression, anxiety, embarrassment/shame, self-esteem, sleep, relationships and impact on others, sexual relationships, social life and quality of life. The remainder of this review will be structured according to these categories. Some studies split OAB into different subgroups: OAB wet (OAB with incontinence), OAB dry (OAB without incontinence), OAB with bother (bothered by OAB symptoms) and OAB without bother (not bothered by OAB symptoms).

### *Depression*

Depression was the second most commonly investigated psychological dimension, after quality of life. Eleven quantitative studies included measures of depression and one qualitative study included findings of depression. All but four of the quantitative studies



(Irwin et al., 2005; Safarinejad, 2009; Stewart et al., 2003; Teloken et al., 2006) compared levels of depression above cut-off scores indicative of clinical depression.

Eight of these studies compared participants with OAB to non-OAB controls (Coyne et al., 2008; Coyne et al., 2011a; Milsom et al., 2012; Safarinejad, 2009; Sexton et al., 2011; Stewart et al., 2003, Teloken et al., 2006; Yoo et al., 2011). All found significantly higher levels of depression in OAB groups.

Six studies examined levels of depression in subgroups of OAB. Two found participants with OAB with bother had significantly higher levels of depression than those without bother (Milsom et al., 2012; Coyne et al., 2011a). One found that those with OAB with sudden urge had significantly higher levels of depression than those with no sudden urge (Coyne et al., 2004). Three studies compared those with OAB wet to those with OAB dry with varying results. Stewart et al. (2003) found significantly higher levels of depression in men with OAB wet compared to men with OAB dry, but no significant differences for women. Irwin et al. (2005) found that those with OAB wet reported feeling significantly more depressed than those with OAB dry. Coyne et al. (2008) found significantly higher levels of depression in OAB wet groups compared to those with OAB dry, and that these depression scores became increasingly worse with higher levels of leakage (such as experiencing postmicturition leakage).

One study did not use a comparison group (Nicolson et al., 2008). In their qualitative study, they found depression and hopelessness was one of the key themes from interviews with OAB patients. They found that OAB impacted upon lifestyle, which then impacted upon the participant's self-esteem and sense of hopelessness and loss at living with the condition day-to-day.

### *Anxiety*

Of the nine studies which reported findings on anxiety, seven were quantitative studies and one qualitative. All but two of the quantitative studies (Knight et al., 2011; Teloken et al., 2006) compared levels of anxiety above cut-off scores indicative of clinical anxiety.

Seven studies compared anxiety levels in OAB participants to non-OAB controls (Coyne et al., 2011a; Knight et al., 2011; Milsom et al., 2012; Safarinejad, 2009; Sexton et al., 2011; Teloken et al., 2006; Yoo et al., 2011). All found significantly higher levels of anxiety in OAB groups compared to controls.

Three studies examined levels of anxiety in subgroups of OAB. One found that participants with OAB wet reported higher levels of anxiety than participants with OAB dry (Teloken et al., 2006). Two studies found participants with OAB with bother had significantly higher levels of anxiety than those with OAB without bother (Coyne et al., 2011a; Milsom et al., 2012).

One qualitative study did not use any comparison group (Nicolson et al., 2008). Two of the six main themes from their analysis include anxiety – anxiety about everyday living (worry about access to toilets outside the home and about incontinence) and fear and coping strategies (previous experiences of urgency and anxiety triggered fear of incontinence, with a resultant impact of organising life around coping strategies).

#### *Embarrassment / Shame*

In contrast to anxiety and depression, only three studies examined embarrassment or shame; one quantitative study included a measure of shame and two qualitative studies found themes relating to embarrassment/shame.

In their quantitative study, Teloken et al. (2006) found that participants with OAB reported significantly higher levels of shame than healthy controls, and that participants with OAB wet reported significantly more shame than those with OAB dry.

In focus groups, Anger et al. (2011) found that women reported self-blame for their condition, in particular that incontinence episodes reflected a 'psychological weakness' within themselves. In Nicolson et al's (2008) study, embarrassment was identified as one of the key themes – both the embarrassment that would occur with an incontinent episode and of the condition itself.

### *Self-esteem*

Only one quantitative study included a measure of self-esteem, and one qualitative study included findings of self-esteem.

Dmochowski and Newman (2007) found that participants with OAB reported significantly more feelings of low self-esteem than those without OAB. Expanding on this finding, Nicolson et al. (2008) identified self-esteem as part of one the key themes in their qualitative – 'self-esteem, sexuality and embodiment' – linking reported low self-esteem with reported poor body image.

### *Sleep*

As the focus of this review is the psychological impact of OAB, studies relating to the functional impact on sleep were not included. However, three quantitative studies included measures of the impact of poor sleep caused by OAB and one qualitative study included findings on the impact of poor sleep caused by OAB.

Newman and Koochaki (2011) found that those with sleep disrupted OAB (woken three or more times a night with urinary urgency) had significantly worse QoL scores than those with less sleep disrupted OAB on all domains except mental health.

Two studies comparing levels of daytime tiredness between participants with OAB and healthy controls (Safarinejad, 2009; Teloken et al., 2006) found that those with OAB had significantly higher tiredness than those without OAB.

Anger et al's (2001) qualitative study found that women with OAB who reported experiencing nocturia also reported chronic sleep deprivation, fatigue during the day and a consequent impact on daily living.

#### *Relationships and impact on others*

Three studies examined the impact of OAB on relationships from either the point of view of the person with OAB or from partners and family members.

Dmochowski and Newman (2007) examined the impact on relationships from the perspective of the person with OAB. They found that participants with OAB reported significantly more feelings of imposition on family members than those without OAB.

Two studies examined the impact of OAB on non-OAB partners or family members. Safarinejad (2009) found that 48% of family members reported concern, disturbance and embarrassment as a result of the participant's OAB. In their qualitative study, Coyne et al. (2009) found that partners reported that lack of sleep due to their partners' OAB affected daily functioning and work productivity. They also found that relatives reported a number of emotions associated with their loved ones' OAB such as anxiety, embarrassment and frustration. Family members also reported that the impact on social activities reduced their quality time together or prevented enjoyable events. They also found that the person with OAB tended to underestimate the emotional impact their condition had on family members.

#### *Sexual relationships*

As the focus of this review is the psychological impact of OAB, studies relating to the functional impact on sexual life were not included. However, four studies examined the psychological impact of functional difficulties as a result of OAB on sexual life.

Three qualitative studies found that, for some participants, OAB's impact on sexual life placed a strain on relationships because of loss of intimacy (Coyne et al. 2007), leakage

and interruptions during sex, and having less sex (Coyne et al., 2009), and having less sex due to low body image (Nicolson et al., 2008).

Two qualitative studies also found that participants reported anxieties related to sex linked to their body image and/or fears of incontinence (Coyne et al., 2007; Nicolson et al., 2008).

Coyne et al. (2011b) found that participants with OAB reported significantly more worry over the future of their sexual life, and significantly more feelings of 'losing something' in terms of their sexual life, than healthy controls.

#### *Social life*

The only quantitative study examining social life (Irwin et al., 2005) reported that participants with OAB wet were significantly more concerned about participating in activities away from home and felt less comfortable in social situations than those with OAB dry.

Both qualitative studies highlighted a reduction in social activities which might be interrupted by trips to the toilet (Anger et al., 2011 and Coyne et al., 2009). OAB patients reported that they would avoid activities such as going to the cinema for this reason (Anger et al., 2011). Family members and significant others of OAB sufferers reported a reduction in social activity and consequent decline in the amount of quality time spent together (Coyne et al., 2009).

#### *Quality of life*

QoL was the psychological dimension most commonly assessed, with twenty-six studies providing a quantitative measure of QoL and two qualitative studies also investigating QoL.

Eleven studies compared OAB patients with non-OAB controls on general QoL (Bunyavejchevin, 2006; Bunyavejchevin et al., 2005; Coyne et al., 2008; Milsom et al., 2012;

Newman et al., 2011; Oh & Ku, 2007a; Oh & Ku, 2007b; Sexton et al., 2011; Stewart et al., 2003; Sut et al., 2012, Teloken et al., 2006 and Ozgur Yenieli et al., 2012). All reported significantly worse QoL in OAB participants than controls.

Nine studies compared OAB participants to controls on sub-dimensions of QoL. Six found that OAB participants scored significantly worse on 'mental health' than controls (Chiaffarino et al., 2003; Coyne et al., 2004; Liberman et al., 2001; Oh & Ku, 2007a; 2007b; Sexton et al., 2011). However, three found that OAB participants' QoL scores were significantly worse than those of controls on all domains except mental health (Milsom et al., 2012; Newman et al., 2011; Stewart et al., 2003)

Two studies broke QoL down into sub-dimensions, but did not use a comparison. One gave the percentage of OAB participants reporting impaired QoL on seven sub-dimensions, including 84.6% reporting an impact of their symptoms on 'going out' and 38.5% on 'work' (Tomoe et al., 2005). The second highlighted a significant association between OAB and 'social function', 'physical function', 'mobility' and 'emotional' but not with 'embarrassment' (van der Vaart et al., 2002).

Ten studies compared OAB with other bladder conditions. Bunyavejchevin (2006) compared OAB with SUI and MUI and found that OAB participants had significantly worse QoL scores than SUIs on all domains except 'physical health', and significantly worse QoL scores than MUIs on all domains except 'pain' and 'social functioning'. Van der Vaart et al. (2002) found that OAB was more highly correlated with negative impact on all domains of QoL than SUI, and more highly related to negative impact upon 'social function' and 'mobility' than UI. When OAB was compared with SUI in Wattanayingcharoenchai et al. (2007), however, there was no significant difference between the OAB group and SUI group on measures of QoL. One study reported that participants with OAB and urinary frequency

had worse QoL scores than those with SUI (Tomoe et al., 2005). In the same study, however, OAB QoL scores were neither consistently higher nor lower than SUI scores or urinary frequency scores. Chiaffarino et al. (2003) reported no significant difference between QoL scores for OAB and UI participants but did find that QoL significantly decreased as severity of symptoms increased, a finding which has been replicated elsewhere (Dmochowski et al., 2007; Vaughan et al., 2011).

Vaughan et al., 2011 found that those with OAB rarely or often and rare UI had significantly worse QoL than those with no OAB; those who often had OAB with UI rarely or often had significantly worse QoL than those who had OAB rarely accompanied by UI rarely; and those who had OAB often and UI often had significantly worse QoL than those who had OAB often but UI never or rarely.

In Bunyavejchevin et al. (2005) OAB participants scored significantly lower on three QoL sub-scales – ‘general health’, ‘social function’ and ‘role-function emotion’ than diabetic participants.

Thirteen studies evaluated the impact of different sub-categories of OAB on QoL. In one, OAB wet participants reported significantly worse QoL than OAB dry participants (Coyne et al., 2004). However other studies have shown no significant difference in the QoL of OAB wet and OAB dry participants (Coyne et al., 2007; Coyne et al., 2008) and one study only showed a significant difference between OAB dry and OAB wet on the ‘physical health’ domain (Teloken et al., 2006). Liberman et al. (2001) found that, compared to controls, both OAB wet and OAB dry had significantly worse ‘mental health’ but only OAB wet had scores significantly worse than controls on ‘social functioning’.

In Coyne et al. (2004), OAB with sudden urge was significantly associated with worse QoL than OAB with no sudden urge. Elsewhere, those with urgency reported significantly

greater impairment of functioning on the 'social' and 'mental role functioning' dimensions than those without (Currie et al., 2006).

Coyne et al. (2008) divided OAB into five subgroups with increasing levels of incontinence. The subgroup with the most incontinence had significantly worse QoL than all other subgroups.

Two studies found that those with OAB and bother had significantly lower QoL than those without bother (Coyne et al., 2011a; Milsom et al., 2012).

In one study, participants with sleep-disrupted OAB had significantly worse QoL scores than participants with less sleep-disrupted OAB (Newman et al., 2011).

Dmochowski et al (2007) found that treated/previously treated participants were significantly more likely than those who had not been treated to report interruption to daily life and being confined to their homes as a result of OAB symptoms.

Finally, two qualitative studies did not use comparison groups (Anger et al., 2011; Coyne et al., 2009). A key theme of Anger et al.'s research was the reduction of quality of life as a result of OAB, with the most impact on travel away from home and particular problems arising from nocturia. Coyne et al. (2009) looked at the impact of OAB on family members/significant others of people with OAB, who reported restricted social and physical activities, resulting in less quality time spent with their significant other/family member with OAB. Additionally, if the individual with OAB had nocturia, their partner reported interrupted sleep and fatigue affecting work and daily functioning.

## **Discussion**

This review found that people with OAB tended to have greater levels of depression, anxiety and embarrassment/shame; difficulties with social life, impact on sleep and sexual



relationships; and a lower QoL than people without OAB. Generally, people with OAB wet reported more difficulties than people with OAB dry. A psychological impact on family members was also found. The quality of life findings supported those of Bartoli, Aguzzi and Tarricone's (2010) review – those with OAB tended to have lower quality of life scores than healthy controls.

Anger et al. (2011) found evidence for self-blame in participants with OAB, and noted that there is little research on self-blame in urinary conditions, and wondered whether self-blame may be due to lack of information on the aetiology of OAB. It may be that patients have difficulty understanding the causes of, for example, an incontinent episode in OAB as the immediate cause is not as obvious as it is for that of a condition such as stress incontinence. Anger et al. (2011) suggested giving patients more information about the aetiology of OAB to help with these difficulties; however this may be difficult to implement. Research has suggested there is disagreement among physicians in the way OAB is and should be defined (Lee et al., 2013). This research also suggested that as OAB is a syndrome (that is, defined by symptoms rather than cause), patients are heterogeneous and their individual disease processes may be poorly defined – creating additional difficulties in providing patients with a clear aetiology.

This lack of clarity about the definition of OAB may also create difficulties in researching the condition, particularly as OAB's key symptom, urgency, cannot be assessed objectively (Wein, 2011). In a number of studies in this review, participants were not formally diagnosed but were assessed using self-report questionnaires. This may have led to participants being included/excluded from OAB groups on the basis of different individual views of 'urgency', skewing the results. Additionally, there were some differences in the way studies defined OAB, particularly in comparison to other urinary conditions. For

example, Van der Vaart et al. (2002) categorised women with 'urge incontinence' as separate to those they categorised as having OAB, while other studies defined women with urgency and urge incontinence as having OAB wet (such as Stewart et al., 2003). This does create difficulties in comparing across research. It would be helpful to more clearly define OAB and any sub-categories of OAB for research purposes, and for patients' understanding of their own condition.

More studies in this review included female participants than male. A European prevalence study found only minor differences in the percentages of men and women experiencing OAB (15.6% vs 17.4% respectively), except for urge incontinence, which was more prevalent among women (Milsom et al., 2001). Interestingly, there is mixed evidence to suggest that women do not seek treatment for lower urinary tract symptoms / incontinence more often than men (Apostolidis, de Nunzio & Tubaro, 2012). This suggests the disparity in research participation is unlikely to be due to more women attending clinics and obtaining a diagnosis (and consequently being more likely to be invited to take part in research). Further research should seek to include male as well as female participants.

An interesting finding was that people with OAB tended to underestimate the emotional impact their condition had on family members (Coyne et al., 2009). The authors noted that the people with OAB were not always aware of the way in which their coping mechanisms to deal with the condition often had a significant, negative impact on their family members. The authors also highlighted that if family members are experiencing high levels of 'psychological burden' from their relatives' condition, they may be less able to support them. They suggested clinicians could consider a more family-based approach when working with people with OAB. This research was a small qualitative study, so further research on the impact on family members, and resulting family dynamics, would be useful.

This may also lead to further research on the use of family-based approaches for chronic conditions, such as OAB, which appear to have an impact on family members. Martire et al (2004), in their review of randomised control trials of family interventions for a range of physical illnesses, found that when family interventions were focussed on both the patient and their spouse, the patient's level of depression reduced. They also found that family-based interventions resulted in the patient's closest family member feeling less depressed, anxious, and burdened. It would be useful to ascertain if these findings are replicated in an OAB population.

The majority of studies examined the impact of OAB on QoL, with comparatively few examining an aspect of psychological well-being in more depth. QoL is a broad dimension, so studies examining this give little indication of the more specific aspects of difficulties associated with OAB. Additionally, there is currently no interdisciplinary journal for urology as there are for other areas of medicine such as cardiology or oncology. This may reflect a lack of, or very little, interdisciplinary working for urological conditions despite, as this review highlights, evidence for psychological difficulties alongside these conditions. Further psychological research is needed within urology to examine the impact on psychological health, with a view to assessing whether a greater level of mental health input into this field is required and what kind of input would be most helpful. For example, seven studies in this review found greater levels of anxiety among OAB participants than those without OAB, and a qualitative study found people with OAB discussed experiencing anxiety related to coping with their condition. These studies examined anxiety caused by OAB, but frequent urination is also a common symptom of anxiety. There may be a vicious cycle for some people with OAB whereby coping with their condition causes anxiety, which causes more frequent urination, which in turn causes greater levels of anxiety. Research could examine this

mechanism, and whether psycho-education about this cycle has enough of an impact or further psychological intervention is needed.

The studies in this review were largely cross-sectional in design. It would be useful to conduct longitudinal studies which examine how, if at all, the impact of OAB changes over time and before and after treatment. Further research could also examine how different aspects of psychological functioning link together. This may provide further indications of how to best support patients with OAB, and may allow a model of the psychological impact of OAB to be proposed.

Though this review offers an overall view of current research on the psychological impact of OAB, it may have some limitations. Firstly, because studies were excluded if they did not include the examination of an aspect of psychological well-being in their objectives, it is possible that some interesting post-hoc findings were also excluded. However, a brief examination of this literature suggests very little data of this kind has been excluded. Secondly, this review did not include studies examining the functional impact of OAB, such as on sleep or sexual functioning. It may be useful to conduct reviews on these areas which consider the functional impact in more detail, as there are a number of studies which could be usefully drawn together. Finally, given the lack of clarity about OAB as a diagnosis, it is possible that relevant studies using similar diagnostic criteria to those included were excluded because they termed their participants as having a general urinary difficulty, not OAB.

Despite these potential limitations, this review provides an overview of the current research on the psychological impact of OAB. OAB was found to impact negatively on a number of areas of individuals' lives, as well as those of their family members. Psychological

health should be considered an important aspect of managing OAB and further research is required to determine how best to provide psychological care and support in this area.

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## **Appendix 1: Modified Downs and Black (1998) checklist**

Q1: Aim clearly described

Q2: Outcomes clearly described

Q3: Patients characteristics clearly described (case-definition and the source for controls)

Q4: Clinical status clearly defined e.g. OAB, SUI etc.

Q5: Principal confounders clearly described

Q6: Main findings clearly described

Q7: Actual p-value reported

Q8: Sample asked to participate representative of the population

Q9: Sample agreed to participate representative of the population

Q10: Appropriate statistics

Q11: Accurate outcome measures

Q12: Same population (cases and controls?)

Q13: Participants recruited at the same time

Q14: Power calculation

Q15: Limitations clearly defined