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RESEARCH ARTICLE

PREVALENCE OF URINARY INCONTINENCE IN MEN WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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ABSTRACT

Background: Chronic Obstructive Pulmonary Disease is a progressive and disabling condition defined by chronic airflow limitation that is not fully reversible. Urinary incontinence is a common health problem in general population. Dysponea is a common feature that has been described in association with impaired sphincter control in some patients. Chronic cough is another symptom that places increased stress on the pelvic floor and may affect urinary incontinence.
Objective: To identify urinary incontinence in male with chronic obstructive pulmonary disease (COPD) and men without Chronic Obstructive Pulmonary Disease.
Design: Case Control study.
Setting: SRM Medical College Hospital and Research centre.
Paricipants: Men with COPD (n=50) and men without COPD (n=50).
Interventions: Validated Questionnaire to identify the prevalence of Urinary Incontinence.
Main Outcome Measures: Prevalence of urinary incontinence using a Questionnaire - International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form (ICIQ UI SF).
Results: Comparing the age criteria 50-60years and 60-70years there is no much significant difference between men with COPD and men without COPD. According to ICIQ-SF questionnaire the prevalence of urinary incontinence is more in men with COPD (28/50, 56.0%) compared with men without COPD (9/50, 18.0%).
Conclusion: Urinary incontinence is more prevalent in men with COPD than in men without COPD.

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INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a major cause of death and disability occurring worldwide (http://www.who.int/en/). It is a progressive and disabling condition defined by chronic airflow limitation that is not fully reversible (http://www.thoracic.org/go/copd) COPD is associated with age and is more common in men (http://www.goldcopd.org/). It is characterized by a progressive irreversible air flow limitation with cigarette smoking being the principal risk factor (Fukuchi, 2004) and also caused due to the air pollution in recent generations.

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Increasingly recognized as a complex, heterogeneous and multicomponent condition, symptoms of COPD include progressive exercise intolerance, dysponea and chronic cough with sputum production. The presence of comorbidities further compounds disease severity through symptom burden, functional performance and health status (Agusti, 2010; Vestbo, 2018). As COPD progresses, one of the associated clinical conditions such as the urinary incontinence may become more common (Hirayama, 2005). Urinary incontinence is a common health problem which is seen in the general population depending on the age criteria. Urinary incontinence (UI) is defined by the International Continence Society as any involuntary leakage of urine (Abrams, 2010). The prevalence of UI varies widely by age, obesity, gender, occupation and daily activities (Ko, 2005; Anger, 2006 and

Goode, 2008) degree, and definition (Minassian, 2008). In older men, prevalence of urinary incontinence estimates range from 17% to 27% (Anger, 2016 and Goode, 2008). If urinary incontinence is left untreated it may become more problematic over time, increasing in severity (Goode, 2008; Lifford, 2008; Ragins, 2008), functional activities and interfering with health status and well-being. When evaluating both UI and COPD separately it results in significant impairment of quality of life (QOL) compared with age-matched healthy men (Schlenk, 1998). A number of specific factors such as occupation, gender may increase the likelihood of urinary incontinence in people with COPD, in addition to common risk factors including age and obesity (Townsend, 2017). Dysponea is a common feature that has been described in association with impaired sphincter control in some patients with COPD (Jones, 1977). Chronic cough with sputum production is another common symptom that places increased stress on the pelvic floor muscles and may affect urinary incontinence. Physical impairment due to dysponea is common in people with more severe COPD, and which increases the risk of developing urinary incontinence (Damian, 1998). People with COPD also have impaired lung function, and this has been shown to have an inverse association with urinary incontinence in older men (Hirayama, 2009). Effective urinary incontinence management strategies and treatments exist, including behavioral techniques, bladder training and other exercise therapy to strengthen pelvic floor muscles, pharmacotherapy, devices, and surgery (Holroyd-Leduc, 2004; Chang, 2008; Mardon, 2006). Nevertheless, only few patients discuss about the urinary incontinence with their doctors or receive treatment (Chang, 2008; Mardon, 2006; Dugan, 2001; Harris, 2007 and Li, 2007). Early detection and treatment may benefit the aging population, potentially preventing the onset of complications that can progress to more serious urinary incontinence. The urinary incontinence has been demonstrated to be a significant clinical problem in women with COPD, (Damian, 1998; Hrisanfow, 2011 and Hrisanfow, 2012) however; findings in men with COPD have been inconsistent (Hrisanfow, 2012; Hrisanfow, 2012 and Hirayama, 2008). It is some what difficult to estimate the true prevalence of urinary incontinence in men with COPD as a direct comparison with men without COPD has never been undertaken. As such, this study investigated the prevalence and impact of urinary incontinence in men with COPD compared with age-matched men without COPD to determine the significance of the clinical problem in this population.

MATERIALS AND METHODS

This study received institutional ethical approval from SRM college of Physiotherapy, SRM University. Permission to recruit subjects and access to medical records were granted by the participating hospital and all participants provided informed written consent.

Inclusion criteria were: age between 50-70 years, and had COPD as the primary functionally limiting illness that was diagnosed by respiratory physicians. Healthy men were sought as the volunteers in response to recruitment flyers located at hospital site. Men with no history of diagnosed COPD.

Exclusion criteria for patients without COPD group were Patient with Lung abscess, pulmonary TB, Patient with neurological problem, Patient with any recent abdomino-thoracic surgery, Men Who are not willing for this study and Prostate cancer.

A structured urinary questionnaire incorporating the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) (Abrams, 2002) a self-completed, brief and robust measure widely used to assess the frequency and amount of urine leakage, as well as the overall subjective impact of urinary incontinence (the extent to which symptoms bother or burden the individual) using a visual analogue scale (score 0 to 10) (Puhan, 2008) was given to assess urinary incontinence and to collect demographic information about the urinary incontinence. Each interview was conducted face-to-face. The purpose of the study was explained to each participant before obtaining their written consent. Confidentiality of the information provided, and the right to withdraw without prejudice, were ensured and maintained throughout the study. Severity of the urinary incontinence was classified as mild, moderate, severe, and very severe, according to the scores which are obtained from the International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form (ICIQ UI SF). The presence of urinary incontinence was dichotomized (yes/no) and defined as report of urinary incontinence on any of the outlined measures.

The ICIQ-SF is a measure for evaluating the severity of urinary incontinence. The reliability, validity, and sensitivity of the instrument have been established (Avery, 2004; Karantanis, 2004). The ICIQ-SF questionnaire consists of three components to determine frequency, quantity, and impact of urine leakage (Abrams, 2002). Frequency was categorized into 0 (never), 1 (about once a week or less often), 2 (two or three times a week), 3 (about once a day), 4 (several times a day), and 5 (all the time). Urinary incontinence was defined as a minimal amount of urine leakage of at least 'once a week or less often'. Quantity was measured from 0 (none), 2 (a small amount), 4 (a moderate amount) to 6 (a large amount). The impact of urinary incontinence on daily life was scored on an incremental scale from 0 (not at all) to 10 (a great deal). The three component scores were then summed to yield a total score ranging from 0 to 21, which reflected the overall level and extent of impact of Urinary Incontinence. The circumstances of urinary incontinence were recorded via a separate self-diagnostic item, with urge incontinence defined as 'leaks before you can get to the toilet', stress incontinence defined as either 'leaks when you cough or sneeze' or 'leaks when you are physically active/exercising', whereas other Urinary Incontinence referred to 'leaks when you are asleep', 'when you have finished urinating and are dressed', 'for no obvious reason', and 'all the time'.

Data analysis

The details collected from the questionnaire ICIQ-SF was entered in MS-Excel sheet and collected data was used for statistical analysis in the SPSS-20 software and the descriptive tabled were generated to demonstrate the findings. Paired T-test was used to compare the difference between the groups.

RESULTS

According to the age criteria 50-60years the urinary incontinence in men with COPD is (28/50, 56.0%) and urinary incontinence in men without COPD is (24/50, 48.0%) and age criteria from 60-70years the urinary incontinence in men with COPD is (22/50, 44.0%) and without COPD is (26/50, 52.0%).

Comparing the age criteria 50-60years and 60-70years there is no much significant difference between men with COPD and men without COPD. Table 1 shows the sample demographics of urinary incontinence in men with COPD and without COPD according to the age criteria. According to the ICIQ-SF questionnaire the COPD in men with slight urinary incontinence is (5/50, 10.0%), moderate urinary incontinence is (17/50, 34.0%), severe urinary incontinence is (28/50, 56.0%) and without COPD in men with slight urinary incontinence is (14/50, 28.0%), moderate urinary incontinence is (27/50, 54.0%), severe urinary incontinence is (9/50, 18.0%). This results shows that the prevalence of urinary incontinence is more in men with COPD compared with men without COPD. Table 2 presents the demographics of urinary incontinence in men with COPD and without COPD depending on the ICIQ-SF questionnaire

Table 1. Sample demographics of urinary incontinence in men with COPD and without COPD according to the age criteria

	Group		*Total*
	With copd	*Without copd*	
AGE 50-60YEARS			
Count	28	24	52
% Within GROUP	56.0%	48.0%	52.0%
AGE 60-70YEARS			
Count	22	26	48
% Within GROUP	44.0%	52.0%	48.0%
TOTAL			
Count	50	50	100
% Within GROUP	100.0%	100.0%	100.0%

DISCUSSIONS

To the author knowledge, this is the first study to use the Age criteria and the ICIQ-SF questionnaire to establish the prevalence of urinary incontinence in men with COPD. The prevalence of urinary incontinence was more in men with COPD when compared to the men without COPD. The findings of 28% prevalence of urinary incontinence in men with COPD (compared with 9% of age-matched men without COPD) are relevant for clinical practice, as it is more common than reported previously. The prevalence of urinary incontinence in the healthy group is consistent with earlier work (Diokno, 1990). It is a challenge to view that COPD is associated with stress incontinence, particularly during coughing there will be leakage of urine due to the increases in abdominal pressure (Hirayama, 2005). In addition to gender differences, it appears that there may be different mechanisms for the development of urinary incontinence in people with chronic lung disease, as indicated by the different patterns of lower urinary tract symptoms.

Men in the general population report urge urinary incontinence more frequently (http://www.aihw.gov.au/publication detail/?id=60129543605). In men with COPD of those with urinary incontinence reported symptoms of urgency which was significantly more than in healthy men. Additionally, urgency associated with dysponea was a significant problem for men with COPD, regardless of urinary incontinence status. This also informs practice as dysponea is an almost ubiquitous feature of COPD, and urgency (even in the absence of urine loss) indicates pelvic floor dysfunction (Abrams, 2010). Increasingly, COPD is being demonstrated to be a multisystem disease but the etiology of the development of multiple comorbidities is yet to be elucidated (Macnee, 2013; Vanfleteren, 2013). The pathophysiology is likely to be multifactorial, and may include skeletal muscle dysfunction that can directly limit the functional capacity of muscles. It appears that systemic inflammation and oxidative stress play an important role in the reduction of skeletal muscle mass in COPD (Van Helvoort, 2006). The role of inflammation in compromising pelvic floor muscle function may be indicated by the relationship between higher C-reactive protein levels and increased prevalence of lower urinary tract symptoms (Kupelian, 2001), and therefore play a role in the increased prevalence of urinary incontinence observed in both men and women with COPD.

Table 2. Presents the demographics of urinary incontinence in men with COPD and without COPD depending on the ICIQ-SF questionnaire

	Group		*Total*
	With Copd	*Without Copd*	
Iciq-SF			
Slight Count	5	14	19
% Within GROUP	10.0%	28.0%	19.0%
ICIQ-SF			
Moderate Count	17	27	44
% Within GROUP	34.0%	54.0%	44.0%
ICIQ-SF			
Severe Count	28	9	37
% Within GROUP	56.0%	18.0%	37.0%
Total			
Count	50	50	100
% Within GROUP	100.0%	100.%	100.0%

Within the context of a progressive disease that requires time consuming remedy and rehabilitation, it is not surprising that most urinary incontinence men with COPD did not perceive the condition had seriously impacted their daily life, as reflected by their mean ICIQ-SF score less than the cut off value of 8 for bothersome urinary incontinence (Cetinel, 2007). It appears that the men were either embarrassed or unaware that the condition is treatable (Homma, 2006). With the increased disease burden as COPD progresses, education and regular assessment for urinary tract symptoms are needed. Addressing urge incontinence should become part of the routine management of men with COPD. Appropriate exercise and treatment involving urologists, therapists and respiratory physicians must be developed and incorporated within the rehabilitation program of COPD patients. Both urinary incontinence and COPD in men are associated with negative psychosocial effects, and poorer QOL (Hrisanfow, 2012). Several limitations should be considered when interpreting the findings. In this study, information on urinary continence was obtained based on self-report via the ICIQ-SF rather than objective measurements of urine loss. Nevertheless, it is now recognized that the use of psychometrically robust self-completion questionnaires is a valid approach for assessing urinary incontinence (Avery, 2007). The ICIQ-SF has good measurement properties and encompasses all aspects of incontinence (Avery, 2004; Karantanis, 2004; Abrams, 1990).

Conclusion

The prevalence of urinary incontinence is higher in men with COPD than in men without COPD, and is a clinically relevant concern, where the specific anatomical, mechanical and pathophysiological mechanisms remain unclear. The future studies can aim at finding the physiology of urinary incontinence in COPD so that it is easy to formulate the

treatment protocol in a standardized way so that Quality of life is improved in better way. We suggest that further studies can be carried out to find out the prevalence of urge versus stress urinary incontinence in COPD.

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