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RESEARCH ARTICLE

RISK OF URINARY INCONTINENCE AMONG INDIAN WOMEN WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE – A PREVALENCE STUDY

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ABSTRACT

Background: Information on the prevalence of urinary incontinence in women with chronic obstructive pulmonary disease is scant. Such knowledge may be important to the development of care for patients with chronic obstructive pulmonary Disease.
Objective: To find out the prevalence of urinary incontinence among Indian women with chronic obstructive pulmonary disease.
Study design: Observational study.
Subjects: 100 subjects with Chronic Obstructive Pulmonary Disease with age group between 30 – 40 years of female.
Outcome measure: Questionnaire for Urinary Incontinence Diagnosis (QUID).
Results: It Shows 12% of Indian women has shown prevalence to urinary incontinence with Chronic Obstructive Pulmonary Disease and 88 % has not shown any prevalence to urinary incontinence with Chronic Obstructive Pulmonary Disease with age group of 30-40 years.
Conclusion: The present study indicate the prevalence of urinary incontinence among the subjects with Chronic Obstructive Pulmonary Disease is about 12% among the age group of 30-40years.Hence, there is a prevalence of urinary incontinence with Chronic Pulmonary Disease in Indian women even at this young age. Certainly there will be worsening of the urinary symptoms as pelvic floor muscles weaken due to menopause, aging and recurrent cough. Incontinence should also be assessed and managed in subjects living with Chronic Obstructive Pulmonary Disease. All Chronic Obstructive Pulmonary Disease subjects should be trained with pelvic floor training and KNACK technique along with routine chest physiotherapy to prevent the complications and to improvise the Quality of Life.

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INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a disease state characterized by airflow limitation that is not reversible; the airflow limitation is usually both progressive and associated with inflammatory response of lungs to noxious particles or gases (GOLD) (Clinical medicine, Parveenkumar, Michael Clark). Chronic obstructive pulmonary disease is chronic airflow obstruction secondary to chronic bronchitis, emphysema or both (GOLD, 2009). Incontinence by definition of the International Continence Society (ICS) is 'involuntary loss of urine, which is objectively demonstrable and a social or hygienic problem''. It includes frequency, urgency, stress, urge or mixed incontinence. The most frequent form of Urinary Incontinence in women is stress urinary incontinence, categorized as ''the complaint of involuntary leakage on effort or exertion or on sneezing or coughing'' (Herzog and Fultz, 1990). The symptoms of the patient complains of incontinence on stress when the intra-abdominal pressure is raised by coughing, sneezing or exercising. This may be due to genuine stress incontinence, but could be entirely or partly due to detrusor contractions provoked by these activities. The sign is an involuntary spurt dribble or droplet of urine is observed to leave the urethra immediately on an increased intra-abdominal pressure (e.g. when coughing) (Hirayama *et al*., 2010) The Stress Urinary Incontinence are caused by trauma to muscle or adjacent tissue, from surgery or childbirth, damage to the nerve supply to sphincter or levator ani muscle, from surgery, childbirth, stretching, fatigue or stretching from overuse (e.g. repeated coughing, straining at stool due to constipation, heavy lifting, obesity. Urge urinary incontinence is categorized as ''the complaint of involuntary leakage accompanied by or immediatelypreceded by urgency'' and has been more frequently reported in elderly women. Age, childbirth, lower urinary tract infections, pelvic surgery and the factors increasing the intra abdominal pressure like overweight, straining at stool and physical exertion are considered to be

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risk factors for Urinary Incontinence, alone or in combination."Urge incontinence" is the involuntary loss of urine associated with a strong desire to void. The amount lost related to the intensity of the urgency and the amount of urine in the bladder. There are two main causes of this type of incontinence. Sensory urgency due to hypersensitivity of the bladder, and motor urgency due to over activity of detrusor (Byles *et al*., 2009). Mixed Urinary Incontinence is the complaint of involuntary leakage associated with urgency and also exertion effort like sneezing or coughing. In women age, Body Mass Index (BMI), parity, smoking and hysterectomy are some of the potential risk factor for urinary incontinence. The main group of patients referred to the physiotherapist is those with storage symptoms resulting in urine leakage incontinence of urine were defined by ICS (Abrams *et al*., 1988) as the involuntary loss of urine that is objectively demonstrable and is a social hygienic problem. No studies in India are done to find the association of Urinary Incontinence and different conditions that may worsen the pelvic floor muscle weakness indirectly. The patients with Chronic Obstructive Pulmonary Diseases due to repeated bouts of coughing strain the pelvic floor muscles. Many Questionnaires were available to find out rate of prevalence of Urinary Incontinence. The scale that we used in this study was Questionnaire for Urinary Incontinence Diagnosis (QUID) which was user friendly and easily understandable and also known for its reliability and validity.

In India for the worse there is a "culture of silence" and associated embarrassment stigma which stops them from even talking about it. They also think it is process of aging and they have to live with it. These people should be made aware that there is someone to help them out, detect this problem and diagnose associated risk factors, so that necessary steps can be taken for its prevention and treatment. Information on the prevalence of Urinary Incontinence in women with Chronic Obstructive Pulmonary Disease is scant. No such study prevails in Indian Population where use of tobacco and pollution is higher range. Such knowledge may be important to the development of care for patients with Chronic Obstructive Pulmonary Disease and also this study may help to promote awareness in society regarding the association of Chronic Obstructive Pulmonary Diseases and Urinary Incontinence. Therefore this study is designed to examine the prevalence of Urinary Incontinence among Indian women with Chronic Obstructive Pulmonary Disease.

MATERIALS AND METHODS

Study design : Non-experimental
Study type : Observational
Sampling method : Convenient Sampling
Sample size : 100 Subjects
Study setting: SRM Medical College Hospital and Research centre Kattankulathur

Inclusion criteria:

Only female
Age group 30-40 years
Confirmed with diagnostic case of Chronic Obstructive Pulmonary Disease

Exclusion criteria:

Patient with lung abscess, pulmonary Tuberculosis
Patient with neurological problem
Cardiovascular problem
Tumours
Patient with recent abdomino thoracic surgery

Procedure

100 female Subjects with diagnosed Chronic Obstructive Pulmonary Disease were selected according to inclusion and exclusion criteria. The selected subjects were well explained about the study and its importance. An informed consent was obtained after explaining clearly about the procedure.General demographic data like Age, Marital status, parity, recent abdominal surgery and Body Mass Index were also considered for the study. Questionnaire for Urinary Incontinence Diagnosis (QUID) was filled by the subjects. After recording the questionnaire, patients were educated about the condition.Breathing exercise, pelvic floor exercise, toilet assistance and life style modifications was taught if they were found to have symptoms of Urinary Incontinence.

RESULTS

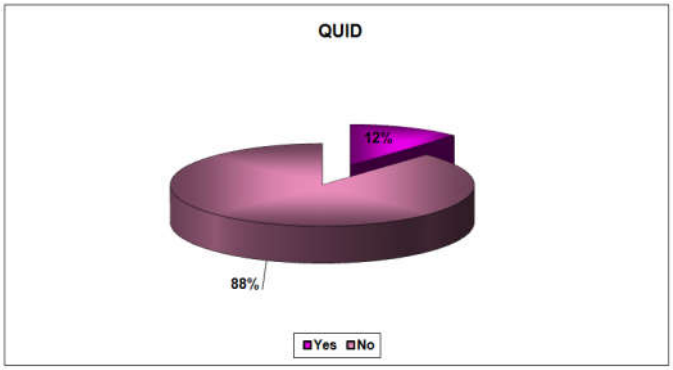
51% of subjects have leakage of urine at most of the time and about 30% of subjects have leakage of urine Often and 9% have Leakage of Urine always or once in awhile whereas 1% reported leakage of urine rarely when they cough or sneeze. 31% of subjects have leakage of urine often and about 25% of subjects report leakage Once in a while and 17% of subjects have leakage of urine most of the time and 18% have Leakage of Urine rarely whereas 1%reported leakage of urine all the time when they bend down or lift something up. 18% of subjects have leakage of urine rarely and about 3% of subjects report leakage Once in a while and 4% of subjects have leakage of urine often when walk quickly, jog or exercise. 37%

Data analysis

Table 1. Prevalence of subjects with chronic obstructive pulmonary disease who reported leakage of urine as per questionnaire for urinary incontinence diagnosis

Symptom Occurrence	cough or sneeze	Bend down or lift something up.	Walk quickly, jog or exercise	Undress in order to use the toilet.	Strong urge/ before reaching the toilet.	Rush to the bathroom because they get a sudden, strong need to urinate
Rarely	1.0	18.0	18.0	37.0	19.0	9.0
Once in a While	9.0	25.0	3.0	22.0	39.0	3.0
Often	30.0	31.0	4.0	26.0	23.0	2.0
Most of the time	51.0	17.0	0	14.0	4.0	2.0
All the time	9.0	1.0	0	1.0	1.0	0

of subjects have leakage of urine rarely and about 26% of subjects report leakage often and 22% of subjects have leakage of urine once in a while and 14% have Leakage of Urine most of the time whereas 1%reported leakage of urine all the time when they undress in order to use the toilet. 39% of subjects have leakage of urine once in a while and about 23% of subjects report leakage often and 19% of subjects have leakage of urine rarely and 4% have Leakage of Urine most of the time whereas 1%reported leakage of urine all the time when they get such a strong and uncomfortable need to urinate that they leak urine (even small drops) or wet them self before reaching the toilet. 9% of subjects have leakage of urine rarely and about 3% of subjects report leakage once in a while and 2% of subjects have leakage of urine often or most of the time that they have to rush to the bathroom because they get a sudden, strong need to urinate.



Graph 1. The prevalence of urinary incontinence among Indian women with chronic obstructive pulmonary disease

Graph 1 Shows the Prevalence of Urinary Incontinence among Indian women with Chronic Obstructive Pulmonary Disease. It Shows 12% of Indian women has shown prevalence to urinary incontinence with Chronic Obstructive Pulmonary Disease and 88 % has not shown any Prevalence to Urinary Incontinence with Chronic Obstructive Pulmonary Disease with age group of 30-40 years.

DISCUSSION

The study was focused on Prevalence of Urinary Incontinence among Indian women with Chronic Obstructive Pulmonary Disease.

Chronic obstructive pulmonary disease (**COPD**) is a type of obstructive lung disease characterized by long term poor airflow. The main symptoms include shortness of breath and cough with sputum production. It typically worsens over time. Eventually walking up stairs or carrying things will be difficult. Tobacco smoking is the most common cause of Chronic Obstructive Pulmonary Disease, with a number of other factors such as air pollution and genetics playing a smaller role. In developing countries like India, one of the common sources of air pollution is poorly vented heating and cooking fires. Long-term exposure to these irritants causes an inflammatory response in the lungs resulting in narrowing of the small airways and breakdown of lung tissue. While treatment can slow worsening there is no cure. The pelvic floor or pelvic diaphragm is composed of muscle fibers of the levator ani, the coccygeus muscle, and associated connective tissue which span the area underneath the pelvis. The functions of pelvic floor muscle are Supportive, Sphinteric and Sexualactivity. Urinary Incontinence (UI), also known as involuntary urination, is any leakage of urine. It is a common and distressing problem, which may have a large impact on quality of life. The results of this study shows 51% of subjects have leakage of urine at most of the time and about 30% of subjects have leakage of urine often and 9%have Leakage of Urine always or once in awhile whereas 1%reported leakage of urine rarely when they cough or sneeze. Whereas 31% of subjects have leakage of urine often and about 25% of subjects report leakage once in a while and 17% of subjects have leakage of urine most of the time and 18% have Leakage of Urine rarely whereas 1% reported leakage of urine all the time when they bend down or lift something up. 18% of subjects have leakage of urine rarely and about 3% of subjects report leakage Once in a while and 4% of subjects have leakage of urine often when walk quickly, jog or exercise. The above results reported by 100 subjects diagnosed with Chronic Obstructive Pulmonary Diseases conclude the prevalence of Stress Urinary Incontinence among Chronic Obstructive Pulmonary Diseases subjects, as all the above activities (cough or sneeze, bend down or lift something up, walk quickly, jog or exercise) produces an Leakage of urine in case of increased Intraabdominal pressure.

This goes in the hand with **Koehler B, Lingemann, Lueder, Weinreich, Teschler H** who concluded that the prevalence of Urinary Incontinence in patients with Chronic Obstructive Pulmonary Diseases is significantly higher compared to controls and published values of a normal population. Stress Urinary Incontinence is the most common finding and the prevalence is surprisingly high in male patients with Chronic Obstructive Pulmonary Diseases. Furthermore, the results of the study documents 37% of subjects have leakage of urinerarely and about 26% of subjects report leakage often and 22% of subjects have leakage of urine once in a whileand 14% have Leakage of Urine most of the time whereas 1% reported leakage of urine all the time when they undress in order to use the toilet. 39% of subjects have leakage of urine once in a while and about 23% of subjects report leakage often and 19% of subjects have leakage of urine rarelyand 4% have Leakage of Urine most of the time whereas 1% reported leakage of urine all the time when they get such a strong and uncomfortable need to urinate that they leak urine (even small drops) or wet them self before reaching the toilet. 9% of subjects have leakage of urine rarely and about 3% of subjects report leakage once in a while and 2% of subjects have leakage of urine often or most of the time that they have to rush to the bathroom because they get a sudden, strong need to urinate. These results convey the occurrence of Urge Incontinence among the subjects with Chronic Obstructive Pulmonary Diseases. As all the questions were related with urgency.

This goes in hand with Hirayama F, Lee AH, Binns CW, Taniguchi H, Nishimura K, Kato (2008) found a higher prevalence of urge incontinence that challenges the conventional view that COPD is associated with stress incontinence due to high pressure coughs. Maaike van Gerwen, François Schellevis, and Toine Lagro-Janssen, (2015), Urinary tract infections, constipation and depression were more prevalent in both men and women with urinary incontinence than in controls. Over all there was 12% of Indian women has shown prevalence to Urinary Incontinence with Chronic Obstructive Pulmonary Disease and 88 % has not shown any prevalence to Urinary Incontinence with Chronic Obstructive Pulmonary Disease with age group of 30-40 years. This was

quiteless than Elisabet Hrisanfow and Doris Hägglund (2011) who concluded that the prevalence of Urinary Incontinence in women and men with Chronic Obstructive Pulmonary Disease was 49·6 and 30·3%, respectively. But the area differs and they had done among 50-75 of age population. In a study previously done by us regarding Age specific prevalence of Urinary Incontinence among community dwelling Indian Women, it was stated that Stress Urinary Incontinence is more prevalent among the age group of more than 50 years; Whereas Urge Incontinence is more prevalent among 37-43 years of women. So this study brings the prevalence of Incontinence symptoms among Chronic Obstructive Pulmonary Diseases subjects in the age range of 30-40 years which no study had attempted. The main reasons behind the Incontinence among these subjects were due to chronic cough the pelvic floor muscles might be impaired from its function of sexual, supportive and sphinteric. This goes in hand with Collins EG[1], Halabi S, Langston M, Schnell T, Tobin MJ, Laghi F (2012) stated that Seventy-four percent of patients had at least one sexual dysfunction, with erectile dysfunction being the most common (72 %). Most were dissatisfied with their current and expected sexual function. Thus it is clear that there was some pelvic floor involvement among patients with Chronic Obstructive Pulmonary Diseases. The abdominal muscles contract strongly during a cough. This increases the pressure on the bladder and pelvic floor. The pelvic floor muscles need to contract with every cough to prevent leakage. This process usually happens automatically.When there is chronic bouts of coughing the pelvic floor muscles may be able to support and cannot act synergistically. This may be the cause of this 12% prevalence of incontinence and this percentage of incontinence will surely increase with age, further more Stress urinary Incontinence is more prevalent than Urge Incontinence. Further studies should be done on a detail assessment on prevalence of different type of incontinence among Chronic Obstructive Pulmonary Disease subjects.

Conclusion

The present study indicates the prevalence of Urinary Incontinence among the subjects with Chronic Pulmonary Disease is about 12% among the age group of 30-40. Hence, there is a Prevalence of Urinary incontinence with Chronic Pulmonary Disease in Indian women even at this young age. Certainly there will be worsening of the urinary symptoms as pelvic floor muscles weaken due to menopause and age, cough. Urinary incontinence care should be included in treatment plans for subjects living with Chronic Obstructive Pulmonary Disease. All Chronic Obstructive Pulmonary Disease subjects should be trained with pelvic floor training and KNACK technique along with routine chest physiotherapy to prevent the complications and to improvise the Quality of Life.

Limitations and Recommendations

Limitations

- The sample size was small for a observation study.
- Age group was limited
- Only one questionnaire (QUID) was used.
- Number of years the patient was affected with Urinary Incontinence and Chronic Obstructive Pulmonary Disease was not considered.

Recommendations

- Male samples can also be included in further studies on urinary incontinence
- Can be done in Older Population
- Can find age specific prevalence of Urinary Incontinence among subjects with Chronic Obstructive Pulmonary Diseases.
- Sexual dysfunction amongsubjects with Chronic Obstructive Pulmonary Diseases can be analysed
- Prevalence of different types of Incontinenceamong subjects with Chronic Obstructive Pulmonary Diseases can be analysed.
- The effectiveness of Pelvic floor muscle training over incontinence symptoms among subjects with Chronic Obstructive Pulmonary Diseases can be studied.

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