A STUDY OF DEPRESSION AMONG ASTHMATIC PATIENTS IN A TERTIARY HOSPITAL

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ABSTRACT

BACKGROUND

Depression among asthmatics is associated with poor asthma control and quality of life. The prevalence of depression in asthmatics varies from 8% to 55% in various studies.[1,2] Depressive symptoms are associated with increased asthma severity, poorer outcome and greater risk for hospitalisation in patients with asthma. Thus, knowledge about prevalence and effect of depression in asthmatic illness may have important implications for identification and appropriate treatment of these patients. Aims and Objectives- The aim of this study is to study the prevalence of depressive disorders in asthmatic patients.

MATERIALS AND METHODS

A hospital-based cross-sectional study conducted in a tertiary care health centre in Puducherry, India. Seventy patients of asthma diagnosed using spirometric criteria, aged 18 - 64 years of both sexes were studied. Patients were screened for depression using PHQ-9 and patients having positive scoring were evaluated in detail by the clinician and ICD-10 criteria was used to confirm the diagnosis of depression. This study is a part of larger study, where patients were followed up for 6 months.

RESULTS

In the sample of 70 asthma patients, 40 patients had depressive disorders (Total prevalence- 57.1%; 15.7%- mild, 24.3%- moderate, 14.3%- moderately severe, 2.9%- severe depression). Majority of them being married, belonging to rural background and of lower- and upper-lower income. Female population having predominance. Mean age group being 30 for males and 35 for females.

CONCLUSION

There is a high prevalence of depression among patients suffering from asthma.

KEYWORDS

Depression, Asthma, Adults.

BACKGROUND

Depression in the present world is a major contributor of morbidity and mortality with life-time prevalence in the general population of almost 20%. The Disability Adjusted Life Years (DALY) of depression accounts to a total of 4.4% in all ages and gender (Women= 5.5%, men= 3.4%). Years of Life Lived with Disability (YLD) for all ages and both sexes attributable to depression is 11.9% (males= 9.75%, females= 14.5%).[3]

Asthma is a chronic medical condition and a serious public health problem in industrialised countries associated with significant morbidity and functional impairment, currently affecting 300 million people globally. The Disability Adjusted Life Years (DALY) of asthma is 1.4% and YLD of 2.3% in males, 1.8% in females and a total of 2.1%.[4]

Asthma patients tend to have higher levels of stress and negative emotions such as panic, fear, irritability, depression and bipolar disorders.[5] Recent reviews have found that depressive symptoms are more common in asthma patients than the general population.[6,7] Nearly, 50% of asthma patients have depressive symptoms.[8]

Symptoms of asthma and depression tend to overlap, specific symptoms of asthma may be linked to depression due to their effect on the individual's quality of life or due to asthmatic symptoms themselves.[9] Dyspnoea, waking at night with asthma and morning symptoms of asthma have a significant relation with depression.[9] Most of the patients have a positive Centre for Epidemiologic Studies Depression Scale (CESD-SF) screen, which is attributable mostly to a somatic sleep symptom that overlaps with asthma symptoms. The Geriatric Depression Scale (GDS) was more consistent with physician's reports of depressive disorders.[10] The association between asthma, depressive and anxiety symptoms may reflect effects of common factors rather than a direct causal link.

Depression can lead to a sense of hopelessness that erodes adherence and other health-promoting behaviour. Cognitive biases are evident in depression even after recovery from an acute episode, but are not found in never-depressed patients with asthma. Depression has a high risk for poor adherence to asthma therapy after discharge.[7]

Neurophysiological Aspects

The relationship between depression and asthma has been explained using two hypotheses- the monoamine hypothesis and the cholinergic hypothesis. The monoamine hypothesis implicates deficiency of the neurotransmitters norepinephrine, serotonin and dopamine at important synaptic sites as responsible for depression. The cholinergic hypothesis states that the major pathophysiological mechanism in affective disorders is an imbalance between

the adrenergic and cholinergic neurotransmitter systems; depression is associated with cholinergic dominance.[2] In this context it is pertinent to note that increased cholinergic activity and parasympathetic tone cause bronchoconstriction in the bronchial smooth muscles.[11]

Dysregulation of the hypothalamic-pituitary-adrenal axis (HPA axis) may predispose people to both major depressive disorders and asthma, and similar alterations in the immune-autonomic nervous and other key systems are apparent and may contribute to this increased risk of co-occurrence.[12] Hypersensitivity reactions may prime the HPA axis to respond aberrantly to stressors, resulting in physical and behavioural consequences.[13]

Emotional stress may exacerbate the physical symptoms of atopic disorders such as asthma. Some data suggest that psychological stress may shift the Th1/ Th2 cytokine balance towards type 2 and cause an immune dysregulation with more allergic or asthmatic reactions during periods of high stress. Psychological stress activates the HPA axis and sympathetic nervous system, leading to an increase in cortisol and catecholamine secretion. Cortisol and catecholamines can suppress Th1 cytokines such as IL-12 and IFN-γ which may then shift the immune response toward a Th2 phenotype.[14] Increased levels of IL-4, IL-5 and IL-13 caused by alteration in immune response may further aggravate existing inflammation after an inhaled antigen exposure.[15]

Aim of the Study

The aim of this study is to study the prevalence of depressive disorders in asthmatic patients.

Study Tools
Spirometric Criteria- Forced Expiratory Volume in One Minute (FEV1)

It is the recommended method for measuring airway limitation and reversibility to establish diagnosis of asthma. This criterion is recommended by GINA 2008 (Global initiative for asthma) and is followed worldwide.

Prime-MD Primary Health Questionnaire Scores

The questionnaire was developed in 1994 by Spitzer et al. It is an efficient screening and evaluation tool for common mental disorders in the primary care setting. PRIME-MD is a 2-stage system. The patient first completes a 26-item self-administered questionnaire.

The 2nd stage consists of a physician administered clinical evaluation guide, screening for 18 mental disorders.

Patient Health Questionnaire (PHQ)

A fully self-administered version of the PRIME-MD, developed in 1999 by Spitzer et al.

The 2 components of the original PRIME-MD were combined into a single, 3-page questionnaire that can be entirely self-administered by the patient (it can also be read to the patient, if necessary). It screens for 8 common mental disorders- Somatic syndrome, depressive disorder, panic syndrome, other anxiety disorders, alcohol abuse, bulimia nervosa and binge eating disorder.

PHQ-9

It consists of 9 questions used only to screen depression, derived from PHQ. It is patient's self-reporting questionnaire. This scale also helps to diagnose the severity if symptoms are based on the scoring. It is used widely to monitor the symptoms and response to treatment.

Semi-structured socio-demographic proforma prepared for the study consists of study parameters.

Socio-Demographic Profile

Age, gender, marital status, socio-economic status (Education, occupation, income), area of domicile-rural/urban.

Inclusion Criteria

Patients aged 18 - 64 yrs., registering at the Department of Respiratory Medicine for the first time with a diagnosis of asthma subsequently confirmed through spirometry at the Department of Respiratory Medicine.

Exclusion Criteria

1. Patients with other co-morbid general medical conditions (hypertension, diabetes mellitus, etc.).
2. Patients who have received psychiatric treatment elsewhere and are on treatment currently.
3. Patients who cannot perform spirometry.
4. Presence of Chronic Obstructive Pulmonary Disease (COPD).
5. Smokers.
6. Severely ill patients unable to co-operate for psychiatric evaluation.
7. Patients who are not under steroids as the main form of treatment since steroids-induced depression will alter the results of the study.

MATERIALS AND METHODS
The Study Sample was of Convenience. It was a Descriptive Study-

All consecutive adult patients, aged 18 - 64 yrs., registering for the first time in the Department of Respiratory Medicine with respiratory symptoms suggestive of airway disease were assessed using spirometry. Cases that fulfilled standard spirometric criteria for the diagnosis of asthma entered step two of the case selection process. Patients with features of COPD and/ or history of smoking were excluded at this stage. All asthmatic patients selected through step one underwent comprehensive systemic examination and laboratory investigations (Haematology, Biochemistry) to exclude co-morbid general medical conditions such as diabetes mellitus, hypertension, thyroid dysfunction, etc. All asthmatic patients without co-morbid general medical conditions were taken up for assessment of depression using PHQ-9, which is a screening tool for depression and later diagnosis of depression was confirmed using ICD-10 criteria. Statistic was only descriptive analysis. Ethical clearance was obtained from Ethical Committee of MGMCRI, Pondicherry.

RESULTS
Age and Gender Distribution

A total of 62 adult asthma patients participated in the study. Their median age was 33 years (range: 18 - 65). Of the participants, 39% were male and 61% were female with

corresponding median (mean) ages of 30 (35.9) and 35 (37.3) years respectively (Figure 1). Both the median (95% confidence intervals about median overlap for genders) and mean (Student's t-test for independent samples, p= 0.69) ages do not differ significantly between genders. The study sample showed female preponderance and male-to-female ratio was 1: 1.5.

Marital Status
Majority of patients in the sample were married.

Socio-Economic Background
The majority of the participants belonged to lower- and upper-lower income.

Area of Domicile
A large proportion of the study participants were from rural background.

Variables	(n= 40)	
Age (year)	40.4 ± 13.7	
Male	25.5	(12)
Female	75.5	(28)
Single	12.6 (8)	
Married	78.2	(28)
Widowed	9.45 (4)	
Upper	3.1	(1)
Upper Middle	0.0	(0)
Middle, Lower-Middle	31.5	(12)
Lower-, Upper-Lower	50.3	(18)
Lower	15.7 (9)	
Rural	56.5	(22)
Urban	43.8	(18)
Table 1. Socio-Demographic Profile of the Asthmatic Patients*		

*Data are presented as mean ±

Of the 70 asthmatic patients registered initially for the study, 40 had depressive disorders giving an overall prevalence of 57.1% with 15.7, 24.3, 14.3 and 2.9% had mild, moderate, moderately severe and severe degree of depressions respectively (Figure 1).
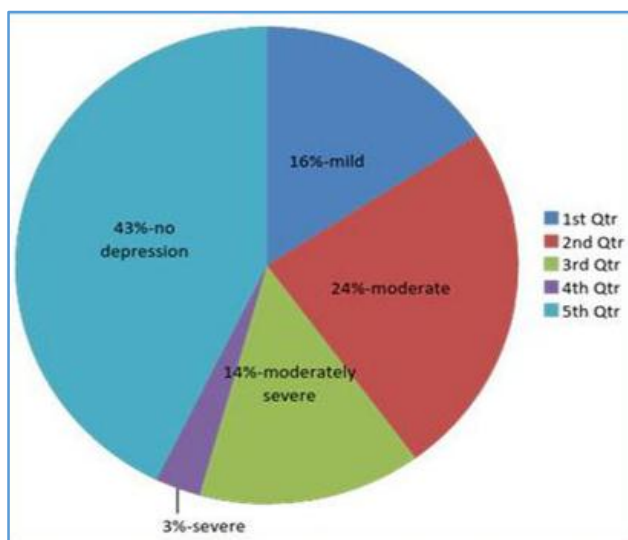
Figure 1. Prevalence of Depression

DISCUSSION
Socio-Demographic Factors- The study sample showed female preponderance and male-to-female ratio was 1: 1.5. This is comparable to several other studies, where female asthmatic patients were more than males.[8] The majority of the participants belonged to lower- and upper-lower socio-economic class followed by middle- and lower-middle socio-economic class. This was similar to other study, which indicated that most of the study population belonging to lower income group.[16] A large proportion of the study participants were from rural area compared to those from urban area.

Prevalence of Depression in Asthma Patients
Majority (n= 40) of the asthmatic patients registered initially for the study had depressive disorders giving an overall prevalence of 57.1%; 15.7%, 24.3%, 14.3% and 2.9% had mild, moderate, moderately severe and severe degree of depressions respectively. This can be compared to similar studies, which reported high prevalence of depression among asthmatics. A study by Yakar reported mild depression in 27% of asthmatics, moderate depression in 9% of asthmatics and severe depression in 7% of asthmatics.[16] The prevalence rate varied from 8%[8,17] to 55.01%.[18] A multinational study by Adrian Loerbroks et al has found that the prevalence of depression in asthma patients to be on an average of 8.4% and Asia in specific is 7.1%.[19] Another study by Javier de Miguel Díez found 9% prevalence of depression.[20] A study conducted in Egypt found prevalence of 13.3%.[16] The prevalence in Indian studies ranged from 13.2% by Bharat Bhushan Sharma[21] to 65% by Misra et al.[22] Contradicting this, a review of literature done by Opolski reported mixed results as to whether persons with asthma are more likely to be depressed than those without asthma.

CONCLUSION
1. The study suggests that patients with asthma have high prevalence of depression.
2. The results indicate the need to screen all asthma patients for depression and other psychiatric co-morbidities and treat them appropriately to improve their quality of life.[1,2]

Limitations of the Study
- One of the main limitations of this study was the relatively small size of the study sample.
- Issue of stigma with regard to mental illness seems to have adverse impact in the process of recruiting cases for the study.

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