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Pulmonary Medicine

Gender Differences in Perception of Dyspnea and Spirometric Abnormalities in Asthma

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Abstract	Original Research Article

Asthma prevalence and severity have gender preference in various ages. In children, boys have an increased prevalence of asthma. In adults, women have an increased prevalence and severity of asthma. Sex hormones, genetic, and epige-netic variations, social, and envi-ronmental factors, and responses to asthma therapeutics are important factors that have an impact on the severity and response of symptoms.
Keywords: Asthma, Fev1, Gender.

SUMMARY

The present study was conducted in department of pulmonary medicine Bhaskar medical college, Hyderabad in June 2022- June 2023.Based on our present study it was concluded that Perception of dysnpea was higher among females than males Fev 1% was lower in females compared to males. Asthma was also associated with comorbidities like allergic rhinitis, obesity, gastro esophageal reflex disease. Females expressed more concern about the disease and felt a greater impairment of their Quality of life, impacting their usual daily activities and producing more discomfort and anxiety/depression. Female sex hormones are hypothesized to affect these outcomes, however other factors have been claimed, such as different behaviors of asthmatic males and females — females have shown a lower threshold for healthcare contact requirement.

AIM

Gender Differences in Perception of Dyspnea and Spirometric Abnormalities in Asthma

OBJECTIVES

1. To study Gender differences in spi-rometric abnormalities in Asthma.
2. To study Gender differences of spirometric abnormalities in Asthma.

METHODS

Informed and written consent will be taken from the patient/guardian. Pulmonary function tests and, per-ception of dyspnea by MMRC SCALE are assessed and results are analyzed.

STUDY POPULATION

All Asthma patients who come to Department of Pulmonary Medicine, Bhaskar Medical College and General Hospital.

Sample Size: 50 Male asthmatic patients and 50 female Asthmatic patients.

Inclusion Criteria:

All the MALE asthmatic and FEMALE Asthmatic patients between the age 20 -55 years.

Exclusion Criteria:

1. Critically ill patients who might need emergency medical care.

2. ASTHMATICS below 20 and above 55 years.
3. Patients who do not consent to be a part of the study.
4. Patients with cardiovascular comorbidities.

STUDYPERIOD: Over a period of 12 months from June 2022 to June 2023.

STUDY DESIGN: Cross-sectional study

DATA ANALYSIS (EXPECTED OUTCOME): Data will be subjected to the ANOVA statistical method using SPSS software 2010.

ETHICAL IMPLICATIONS
- The study subjects will be selected following inclusion and exclusion criteria.
- Written & informed consent will be taken.
- Every patient will be completely ex-plained about the study and related procedures and their importance and complications in their understanda-ble language.

FINANCIAL IMPLICATIONS:
- Funding–none

- Expenses if any will be incurred by me.

INVESTIGATIONS:
- *Chest x ray*
- Pulmonary functio test: Spirometry

STATISTICAL ANALYSIS:
All the information obtained from our study population was collected and recorded in master chart. Statistical significance was analysed by the Chisquare test and logistic regression analysis was performed with SPSS software to assess the independent association of variables found to be significant in univariate analysis.
- If the Pvalue is between 0.000 to 0.010, it is considered to be significant at level1- Highly Significant
- If the Pvalue is between0.011 to 0.050, it is considered to be significant at level 5- Significant
- If the Pvalue is between 0.051-1.000, it is considered insignificant at level5- Not Significant.

RESULTS

Table 1: Sex Distribution of Study Population

| SEX	PERCENT
MALE	50
FEMALE	50
TOTAL	100
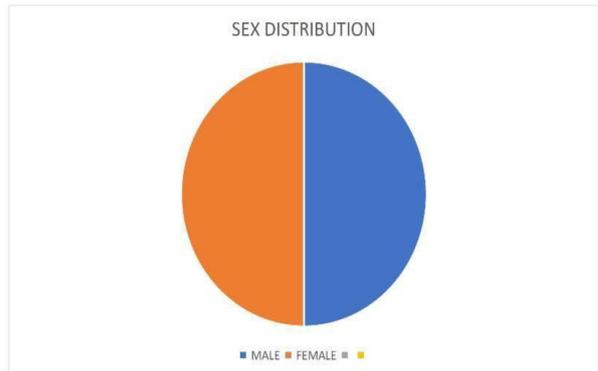
SEX DISTRIBUTION

Table 2: Age Distribution of the Study

AGE DISTRIBUTION

AGE	NUMBER OF PATIENTS
20-30	28
30-40	36
40-50	20
>50	16
TOTAL	100
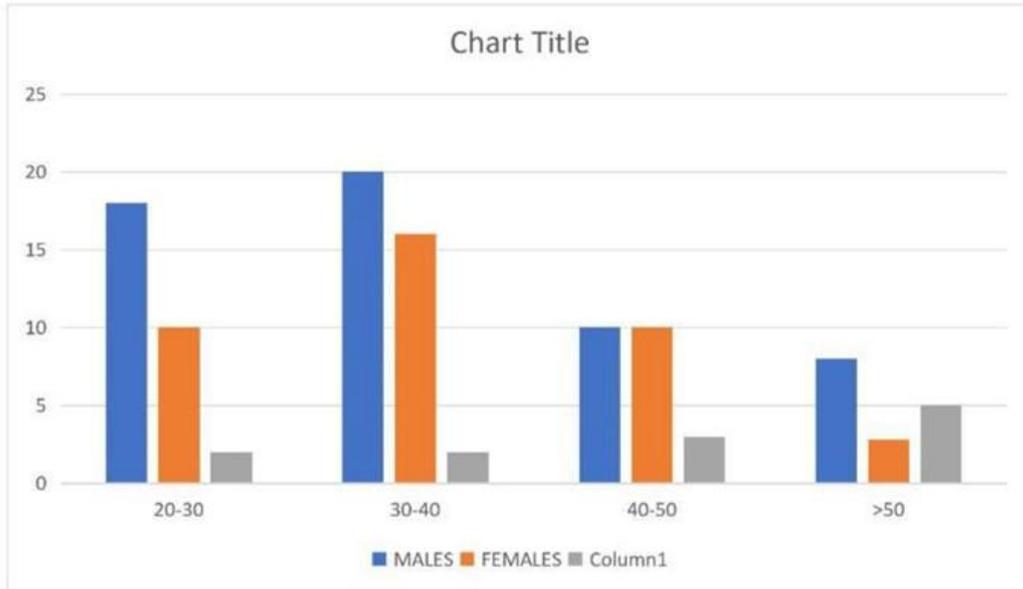
Table 3: Severity According to New Gina Guidelines

FEV 1 % CATEGORY					
		Frequency	percent	Valid percent	Cumulative percent
VALID	<60%	13	13.0	13.0	13.0
	60-79%	61	61.0	61.0	74.0
	80 %AND ABOVE	26	26.0	26.0	100.0
	TOTAL	100	100.0	100.0	

Table 4: Association between Fev1 and Gender
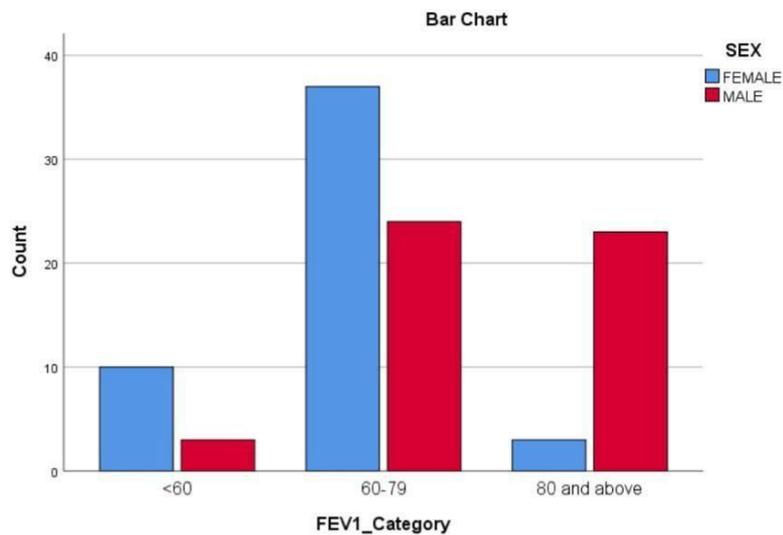
Association between severity of FEV1% and Gender					
		FEV1%			Total	
		<60	60-79	80 and above		Test of significance
Gender	MALE	3	24	23	50	χ²=21.9, df=2, p=0.008
	FEMALE	10	37	3	50	
Total		13	61	26	100	
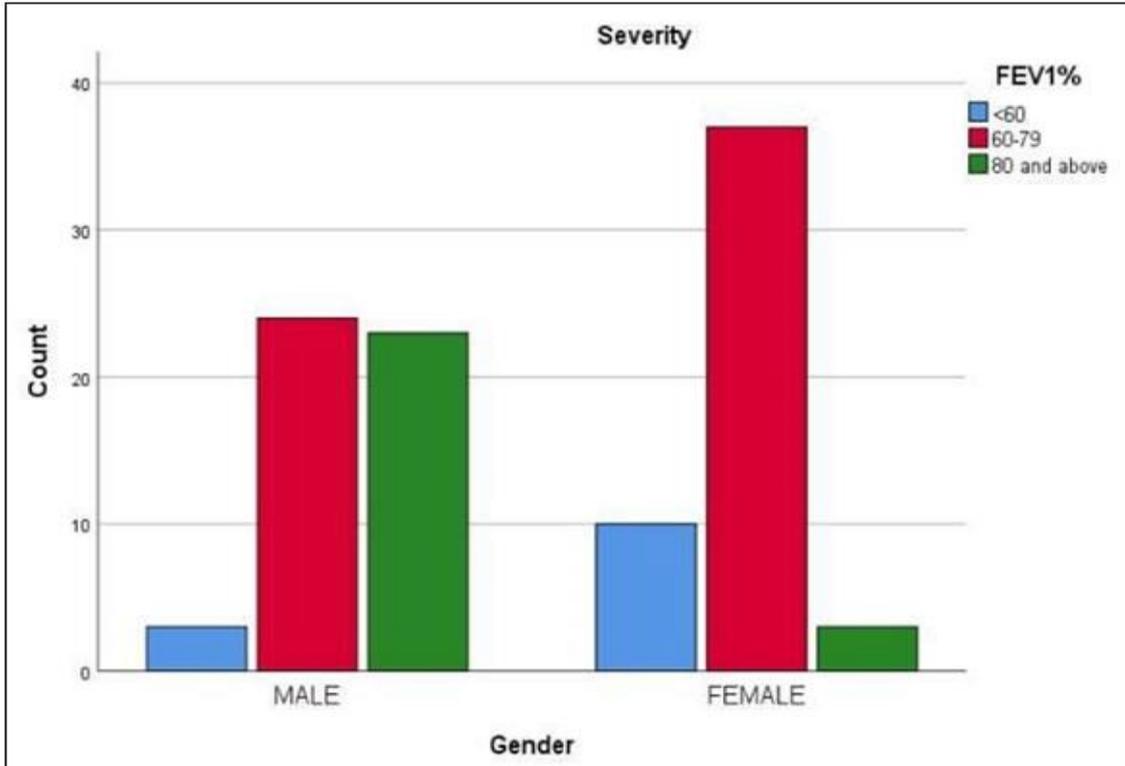
Table 5: Association between Asthma and Other Comorbid Conditions

COMORBID CONDITIONS	PERCENTAGE
ALLERGIC RHINITIS	34
SINUSITIS	7
ECZEMA	6
GERD	4
OBESITY	5
NONE	44
TOTAL	100
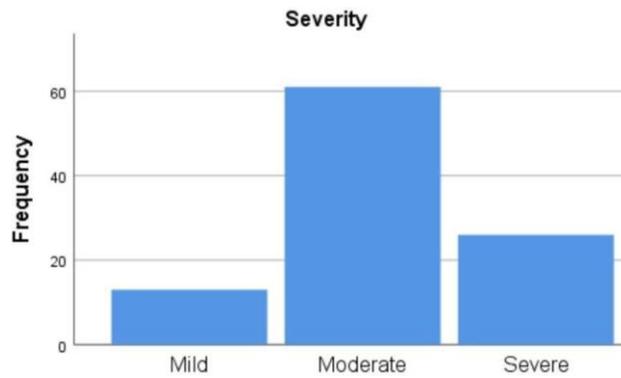
Table 6: MMRC Grading of Population

SEX * MMRC GRADE Crosstabulation

			MMRC GRADE					Total
			0	1	2	3	4	
SEX	FEMALE	Count	1	4	11	20	14	50
		% within SEX	2.0%	8.0%	22.0%	40.0%	28.0%	100.0%
	MALE	Count	3	24	11	10	2	50
		% within SEX	6.0%	48.0%	22.0%	20.0%	4.0%	100.0%
Total		Count	4	28	22	30	16	100
		% within SEX	4.0%	28.0%	22.0%	30.0%	16.0%	100.0%

Table 7: Asthma Control Questionarre

ACQ SCORE	MALES	FEMALES
< 4	28	24
>4	22	26

DISCUSSION

In our study, a total of 100 cases were selected, out of them 50 were male and 50 were female. India's prevalence of asthma is 2.05% with almost equal sex propor-tion of male1.09% and female 0.96%. Overall, females (9.5%) were more than males (7.0%). Although the female-to-male bal-ance changes over development, asthma is less common in females than males during childhood, but more common in females than males during adulthood because of hor-monal factors. This was a study conducted in Bhaskar Medical College Hospital with 100 consecutive patients. The purpose of the study was to find out if there were any Gender-specific differences in the percep-tion of dyspnea and spirometric ab-normalities.

Gender was compared with the se-verity of bronchial asthma and found that most of the females were presented with severe asthma when compared to males showing a signif-icant correlation (pvalue 0.008). In various literatures, asthma in women was reported to be more severe and associated with higher health care use. After puberty, a gender switch occurs, and asthma becomes more prevalent and severe in women. Girls who mature early, and pregnant women are likely to be exposed to higher estrogen levels, and greater cumulative hormonal exposure of sex hormones, which place them at higher risk for asthma development later in life. In contrast, oral contraceptive may be protective and decrease the risk of exacerbation in asthmatic women.

CONCLUSION

Based on our present study it was concluded that:
- Asthma was also associated with comorbidities like allergic rhinitis, obesity, gastroesophageal reflux dis-ease.
- Perception of dyspnea was higher among females than males.
- Fev 1% was lower in females compared to males.
- Moreover, females expressed more concern

about the disease and felt a greater impairment of their Quality of life, impacting their usual daily activities and producing more dis-comfort and anxiety/depression.

- Female sex hormones are hypothe-sized to affect these outcomes, however, other factors have been claimed, such as different behaviors of asthmatic males and females —females have shown a lower thresh-old for healthcare contact require-ment.

- Different adherence to medica-tions—females seem to need more encouragement and education than males regarding the correct use of inhalers and different attitudes of caregivers toward males and females—with for example females undergoing less spirometry testing. Concerning medications, it may be interesting to report that our female population showed a trend toward a greater use of OCS and a lower use of pure inhaled medications.

REFERENCES

- Global Initiative for Asthma (GINA), National Heart, Lung and Blood Institute (NHLBI) Global Strategy for Asthma Management and Prevention. Bethesda (MD): Global Initiative for Asthma (GINA), National Heart, Lung and Blood Institute (NHLBI); 2006. p. 339. Available from: http://www.ginasthma.com.
- Jay Grossman Oneairway, onedisease Chest 1997; 111:11S-16S.
- Philip, G., Malmstrom, K., Hampel Jr, F. C., Weinstein, S. F., LaForce, C. F., Ratner, P. H., ... & Montelukast Spring Rhinitis Study Group. (2002). Montelukast for treating seasonal allergic rhinitis: a randomized, double-blind, placebo-controlled trial performed in the spring. *Clinical & Experimental Allergy*, *32*(7), 1020-1028.
- Marketos, S. G., & Ballas, C. N. (1982). Bronchial asthma in the medical literature of Greek antiquity. *Journal of Asthma*, *19*(4), 263-269.
- CDC. [Accessed Dec 2]; National Health Interview Survey (NHIS) data. http://www.cdc.gov/asthma/nhis/2012/data.htm.2.
- Sullivan, P. W., Ghushchyan, V. H., Slejko, J. F., Belozeroff, V., Globe, D. R., & Lin, S. L. (2011). The burden of adult asthma in the United States: evidence from the Medical Expenditure Panel Survey. *Journal of allergy and clinical immunology*, *127*(2), 363-369.
- Moorman, J. E., Akinbami, L. J., Bailey, C. M., Zahran, H. S., King, M. E., Johnson, C. A., & Liu, X. (2012). National surveillance of asthma: United States, 2001-2010. *Vital & health statistics. Series 3, Analytical and epidemiological studies*, (35), 1-58.
- Akinbami, O. J. (2012). *Trends in asthma prevalence, health care use, and mortality in the United States, 2001-2010* (No. 94). US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics.
- Patel, M., Pilcher, J., Reddel, H. K., Qi, V., Mackey, B., Tranquilino, T., ... & SMART Study Group. (2014). Predictors of severe exacerbations, poor asthma control, and β-agonist overuse for patients with asthma. *The Journal of Allergy and Clinical Immunology: In Practice*, *2*(6), 751-758.
- GBD 2016 Disease and Injury Incidence and Prevalence Collaborators. (2017). Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet,* 390, 1211-1259.
- Schatz, M., & Camargo Jr, C. A. (2003). The relationship of sex to asthma prevalence, health care utilization, and medications in a large managed care organization. *Annals of allergy, asthma & immunology*, *91*(6), 553-558.
- El-Husseini, Z. W., Gosens, R., Dekker, F., & Koppelman, G. H. (2020). The genetics of asthma and the promise of genomics-guided drug target discovery. *The Lancet Respiratory Medicine*, *8*(10), 1045-1056.
- Han, Y. Y., Forno, E., & Celedón, J. C. (2020). Sex steroid hormones and asthma in a nationwide study of US adults. *American journal of respiratory and critical care medicine*, *201*(2), 158-166.
- Gomez, J. L. (2019). Epigenetics in asthma. *Current allergy and asthma reports*, *19*, 1-6.
- Wang, E., Wechsler, M. E., Tran, T. N., Heaney, L. G., Jones, R. C., Menzies-Gow, A. N., ... & Price, D. B. (2020). Characterization of severe asthma worldwide: data from the International Severe Asthma Registry. *Chest*, *157*(4), 790-804.
- Moore, W. C., Bleecker, E. R., Curran-Everett, D., Erzurum, S. C., Ameredes, B. T., Bacharier, L., ... & Wenzel, S. E. (2007). Characterization of the severe asthma phenotype by the national heart, lung, and blood institute's severe asthma research program. *Journal of Allergy and Clinical Immunology*, *119*(2), 405-413.
- Wu, W., Bleecker, E., Moore, W., Busse, W. W., Castro, M., Chung, K. F., ... & Wenzel, S. E. (2014). Unsupervised phenotyping of Severe Asthma Research Program participants using expanded lung data. *Journal of Allergy and Clinical Immunology*, *133*(5), 1280-1288.