

Assessment Of The Association Between Age, Gender And Asthma Symptom Frequency Among Patients In Abbottabad

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Abstract

The prevalence of asthma in Abbottabad highlights and analyzes the association of age and gender with asthma symptom and frequency among patients in district Abbottabad. A cross-sectional study design was proposed, involving patients diagnosed with asthma in Abbottabad. Data was collected using structured questionnaires focusing on demographic characteristics. Analysis was done to determine the association of age and gender with asthma symptom and frequency among patients in district Abbottabad. The findings are expected to provide ideas into the most significant contributors to asthma in the local population. This study will contribute to the development of prevention strategies and awareness programs, aimed at reducing the asthma in District Abbottabad.

Introduction

Asthma is a chronic respiratory disease characterized by airway irritation and recurrent episodes of coughing, chest tightness, and shortness of breath. It is a complex condition through interactions between genetic tendency and environmental factors. Environmental exposures such as air pollution, smoke, allergens, and respiratory infections, can further contribute to the progression of asthma (Scherzer & Grayson, 2018). Asthma represents a major public health challenge affecting individuals of all ages, ethnic groups. The prevalence of asthma has increased over recent decades, particularly in urbanized and industrialized regions. This rise has been attributed to changes in environmental conditions, lifestyle factors, and increasing exposure to allergens and pollutants. The disease not only affects physical health but also has social and economic consequences due to healthcare costs (Bousquet *et al.*, 2010). Despite advances in diagnosis and treatment asthma contributes to approximately 250,000 premature deaths annually, many of which are preventable through appropriate disease

management (Bousquet *et al.*, 2010). Effective asthma control requires early diagnosis, regular monitoring and adherence to prescribed medications.

Objective: To Analyze association of age and gender with asthma symptom and frequency

among patients in district Abbottabad

Research Methodology

This study adopted a cross-sectional analytical design to investigate the association of age and gender with asthma symptom and frequency among patients in district Abbottabad. The study included patient diagnosed with asthma, selected from Ayub Teaching Hospital, Abbottabad. Inclusion criteria consisted of patients of all age groups with a confirmed diagnosis of asthma, while individuals with other chronic respiratory diseases excluded to minimize confounding effects. Data was collected using a structured questionnaire designed to collect information on socio-demographic characteristics. In addition relevant clinical information was obtained from medical records where obtainable. Before data collection consent was obtained from all participants. The results were presented in the form of graphs to know about association of age and gender with asthma symptom and frequency.

Literature Review

There is sufficient literature available on the association of age and gender with asthma symptom and frequency among patients. The scholar selected some relevant literature in this regard. Asthma is an inflammatory airway disease characterized by wheezing, coughing, chest tightness, and shortness of breath. Previous studies have demonstrated that the prevalence of asthma differ according to age and gender. Before adolescence, asthma is more common among boys; however, after adolescence, the prevalence shifts and becomes higher among females. This transition is believed to be influenced by hormonal changes and genetic vulnerability. Moreover, adult women are more likely to experience severe asthma symptoms and poorer disease control compared to men. Gender differences in asthma have been comprehensively investigated. Postma (2007) reported that severe asthma occurs more frequently in females and that the shift in prevalence from males to females. Similarly, Fuseini and Newcomb (2017) found that adult women have a higher prevalence of asthma. Their review highlighted the role of estrogen and testosterone in regulating airway inflammation and bronchial responsiveness, which may contribute to gender-related differences in asthma symptoms. Age also plays an important role in asthma appearance and symptom frequency. Research has shown that symptom patterns often change across the lifecycle. Nocturnal symptoms, wheezing, coughing, and chest tightness may become more noticeable in adults, particularly among females. Recent research reviews highlight that gender-related factors influence asthma diagnosis, symptom perception, disease management and treatment outcomes. Understanding these associations is essential for developing targeted interventions and improving asthma control. This study has been explained in following headings.

1. Prevalence of Asthma age wise and gender wise

The prevalence of asthma among the 70 participants from Abbottabad was examined according to gender and age group. Of the total participants, 39 were females and 31 were males. Females constituted 56% of the study population, while males accounted for 44%. The findings revealed that asthma prevalence was higher among females than males, indicating a greater burden of the disease in the female population (Fig.1). Asthma prevalence was also examined across different age groups. The lowest prevalence was observed among participants younger than 12 years. The prevalence increased in the 13–25 years age group and reached its highest level among individuals aged 26–65 years. A decline in asthma prevalence was noted among participants aged over 65 years (Fig. 2). These findings suggest that asthma was more common in the adult population, particularly among individuals between 26 and 65 years of age, while lower rates were observed in younger children and older adults.

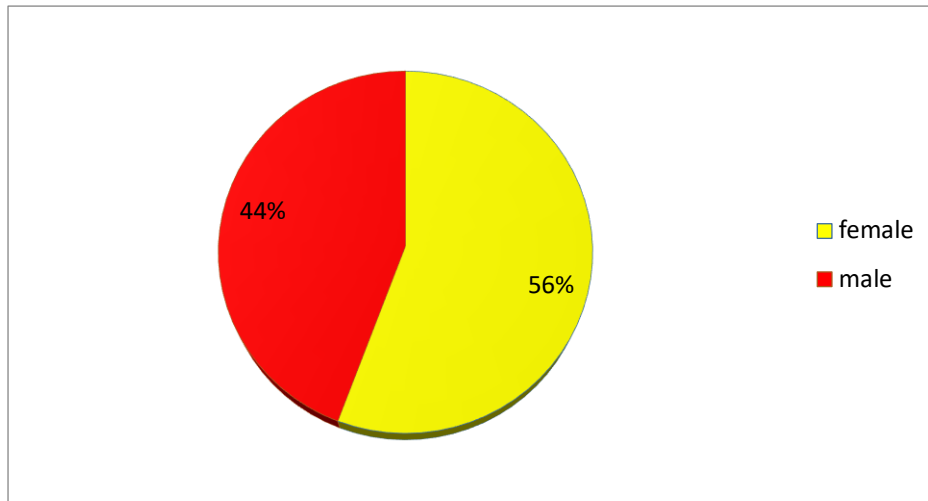


Fig. 1: Graph representing prevalence of asthma patient’s gender wise.

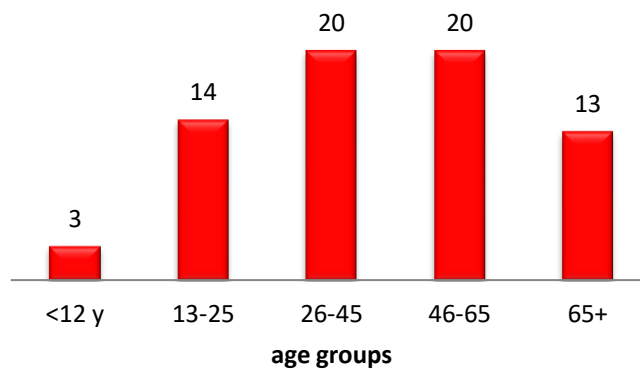


Fig. 2: Graph representing the prevalence of asthma age group wise

2. Frequency of wheezing and coughing in Asthma patients

Analysis of the collected data showed that daily wheezing was reported by 10 male and 13 female participants, while daily coughing was reported by 8 males and 13 females. These findings indicate that daily respiratory symptoms were more common among females than males. Weekly wheezing was reported equally by both genders, with 8 male and 8 female participants experiencing symptoms on a weekly basis. In contrast, weekly coughing was more frequently reported among females (7 participants) compared to males (4 participants). For symptoms occurring rarely, wheezing was substantially higher among females (13 participants) than males (5 participants), whereas coughing showed a smaller difference, being reported by 8 females and 5 males. The results demonstrate that coughing and wheezing were common symptoms among asthma patients, occurring at varying frequencies ranging from daily to occasional episodes. Females generally reported a higher frequency of both symptoms compared to males, suggesting a greater symptom burden among female asthma patients in the study population (Fig. 3).

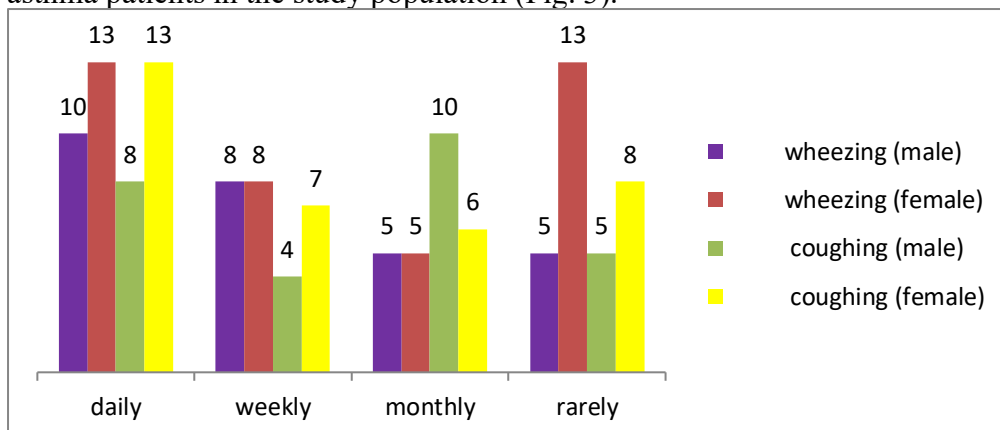


Fig. 3: Graph showing frequency of coughing and wheezing symptoms in asthma patients.

3. Frequency of chest tightness in Asthma patients

The frequency of chest tightness among asthma patients in Abbottabad District was assessed. The results showed that the largest section of participants reported always experiencing chest tightness during physical activity, including 9 males and 16 females. This finding indicates that chest tightness was more prevalent among female participants than male participants. Participants who reported often experiencing chest tightness included 6 males and 11 females, further demonstrating a higher frequency of symptoms among females. A smaller number of participants reported experiencing chest tightness only sometimes, comprising 2 males and 3 females. In contrast, 2 males and 2 females stated that they never experienced chest tightness during physical activity. Very few participants reported rarely experiencing this symptom. The findings suggest that chest tightness during physical activity is a common symptom among asthma patients, with females reporting a higher frequency of symptoms across most response categories. These results highlight the greater burden of activity-related respiratory anxiety among female asthma patients in District Abbottabad (Fig. 4).

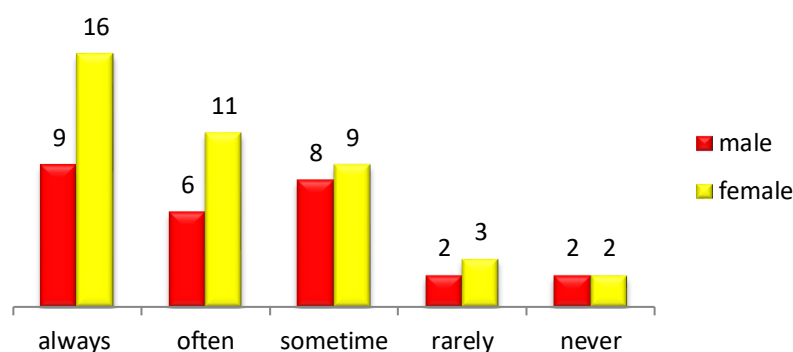


Fig. 4: Graph showing frequency of chest tightness during physical activities

4. Frequency of waking up due to breathing issues among asthma patients

The study investigated the frequency of sleep disturbances caused by breathing problems among asthma patients in Abbottabad. The findings revealed that the largest section of participants reported waking up every day due to breathing difficulties during sleep, including 11 males and 16 females. This indicates that daily sleep disruption related to respiratory problems was more common among female patients than male patients. The second largest group consisted of participants who experienced breathing-related sleep disturbances occasionally, accounting for a total of 22 patients, including 7 males and 15 females. A smaller number of participants reported experiencing these disturbances on a weekly basis (5 males and 6 females) or monthly basis (4 males and 2 females). Only four participants reported never experiencing breathing problems that disturbed their sleep. The results suggest that breathing-related sleep disturbances are a common symptom among asthma patients in the study population. The higher frequency of reported sleep disturbances among females indicates a greater burden of night-time respiratory symptoms in female patients compared to males. These findings highlight the significant influence of asthma on sleep quality among women (Fig. 5).

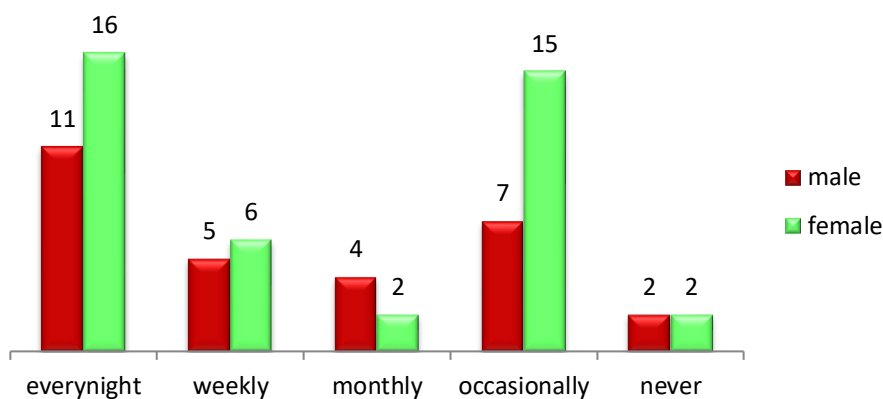


Fig. 5: Graph showing frequency of waking up due to breathing issues among patients

5. Breathing issue in asthma patients during different timing

The study evaluated the timing of respiratory symptoms among asthma patients in Abbottabad to determine when breathing problems were most regularly experienced. The results showed that the majority of participants (25 patients) reported experiencing asthma symptoms during the night, with females slightly outnumbering males in this category. This finding suggests that night-time symptoms are the most common appearance of asthma among the study population. A considerable number of participants also reported experiencing symptoms during the morning (18 patients), while 12 patients experienced symptoms primarily in the afternoon. Comparatively fewer participants (9 patients) reported respiratory symptoms during the evening. Only 6 participants indicated that their symptoms did not occur at any specific time of the day. The findings demonstrate that asthma symptoms occur throughout the day but are most prevalent during the night-time. The higher frequency of nocturnal symptoms may reflect increased airway sensitivity and respiratory discomfort during sleep (Fig. 6).

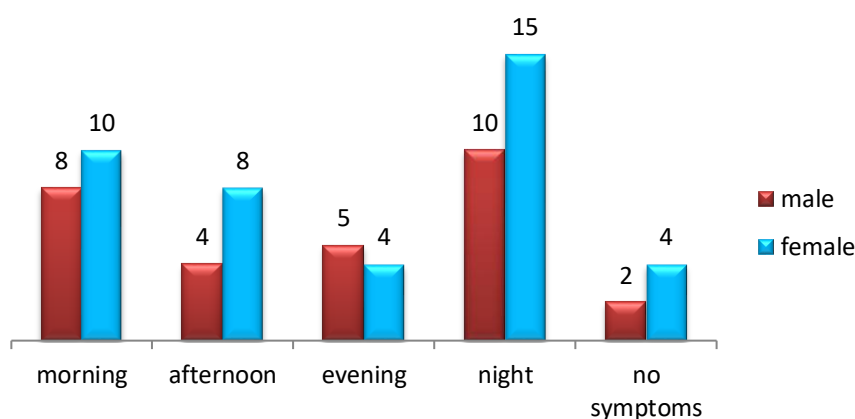


Fig. 6: Graph showing frequency of breathing issue during different timing

Result and Discussion:

The aim of this current study was to assess the prevalence of asthma and its main contributing factors in various age groups in Abbottabad. In this study the association between age and asthma symptoms, environmental factors like indoor air pollution, smoking, dust exposure and seasonal variation was investigated. Our findings provide valued understandings into the prevalence of asthma in Abbottabad. We observed through this study that asthma was slightly more common in women than in men. The prevalence of asthma among the 70 participants from Abbottabad was analyzed according to gender and age group. Of the total participants, 39 were females (56%) and 31 were males (44%). Findings indicated a slightly higher prevalence of

asthma among females compared to males, suggesting a greater disease burden in the female population of the study sample, which is consistent with global evidence showing higher asthma prevalence in females after puberty due to hormonal and immunological influences (Global Initiative for Asthma (GINA), 2025; Dharmage *et al.*, 2019). Our study revealed that asthma was lowest in children under 12, increased in the 13–25 age groups and highest in adults 26–65, and slightly decreased in older people. When examined by age, the lowest prevalence was observed in participants under 12 years of age. The prevalence increased in the 13–25 years age group and reached its peak among individuals aged 26–65 years. Asthma was found to be more common in adults, and persistent asthma contributes significantly to disease burden in working-age populations (GINA, 2025; To *et al.*, 2012). These findings match previous studies, which suggest that work exposures, pollution, and lifestyle factors often cause asthma in adults. The frequency of coughing and wheezing symptoms among female patient of district Abbottabad was higher. According to the collected data, daily wheezing was reported by 10 males and 13 females. Tollefsen *et al.* (2007) reported similar result that female is associated with higher frequency and more stable wheeze during adolescence. Analysis of respiratory symptoms showed that coughing and wheezing was common among asthma patients, with varying frequencies ranging from daily to rare episodes. Daily wheezing and coughing were more frequently reported by females than males, and a similar pattern was observed for weekly and rare symptoms, indicating a generally higher symptom burden among female participants. Chest tightness during physical activity was also frequently reported, with the highest proportion of participants experiencing it “always” or “often,” again more commonly among females. These findings are supported by evidence that females with asthma often report higher symptom severity and poorer disease control compared to males, due to differences in airway approachability (Bjerg *et al.*, 2015; Schatz & Camargo, 2003). Overall, these patterns highlight that female patients consistently experienced more frequent and severe respiratory symptoms. Our study found that a range of symptoms, wheezing, chest tightness and coughing, was severe in asthma patient, which related to the findings of He *et al.* (2020) who conducted the study on frequency and symptom of asthma in China and reported that many participants had sleep problems due to breathing and chest discomfort during physical activity, reflecting common signs of asthma. The results of this study also showed that asthma symptoms were more evident at night. Many patients in the current study reported more severe coughing and wheezing at night or in the early morning, which closely matches the observations reported in earlier research. Therefore, the present findings are strongly consistent with previous studies, indicating that at night-time asthma is more common. The findings of the study are also in agreement with previous research, mainly the study by (Douglas, 1985) who stated that asthma symptoms are deteriorating during the night and early morning. Our findings indicated that the effects of exposure to indoor air pollution from the use of cooking fuels affect the respiratory system in women aged 15-60 years. Our finding are supported by Dutt, *et al.* (1996) who conducted the study on effect of indoor air pollution on the respiratory system of women using different fuels for cooking in an urban area of Pondicherry, India and stated that highest exposures to air pollutants occur inside homes where biofuels are used for daily cooking. Sleep and daily symptom patterns further demonstrated the impact of asthma on patients’ quality of life. A large proportion of participants reported waking up due to breathing difficulties, with daily nocturnal symptoms being more common among females. In terms of timing, asthma symptoms were most frequently reported at night, followed by morning. The results indicate that asthma indications are persistent and most noticeable during night-time. This is consistent with research showing that nocturnal asthma is associated with increased airway inflammation and reduced quality of life (Katsoulis *et al.*, 2017; GINA, 2025). The present findings are consistent with previous studies, indicating that at night-time asthma is more common.

Conclusion:

This study highlights that asthma is a significant health concern in Abbottabad, with a higher prevalence in females and a clear variation across age groups, peaking in adults aged 26–65 years. The findings also demonstrate that environmental and lifestyle factors such as indoor air pollution from cooking smoke, smoking, dust exposure, and seasonal changes play an important role in aggravating asthma symptoms. Respiratory symptoms including wheezing, coughing, chest tightness, and night-time uneasiness were more frequently reported among females, indicating a greater symptom burden and poor disease control in this group. The study emphasizes that asthma in Abbottabad is influenced by biological and environmental factors, and its impact on sleep quality and daily functioning particularly due to night-time worsening further underlines the need for improved awareness, and prevention strategies to reduce exposure to risk factors and improve patient outcomes.

Recommendations:

Based on the findings following recommendations can be made to improve asthma management among patients in Abbottabad.

1. **Enhance Public Awareness:** Health authorities should organize awareness campaigns to educate the public about asthma risk factors, symptom, trigger escaping, and the importance of prescribed treatment.
2. **Target High-Risk Groups:** Asthma symptoms were found to be more frequent among females and adults aged 26–65 years, special attention should be given to these groups through regular screening programs.
3. **Monitoring of Nocturnal Symptoms:** As the majority of patients suffering symptoms during the night, healthcare providers should routinely assess night-time asthma symptoms during clinical visits.
4. **Regular Follow-Up:** Asthma patients should be encouraged to attend regular medical check-ups to monitor disease progress and treatment effectiveness.
5. **Reduce Environmental Triggers:** Efforts should be made to reduce exposure to common asthma triggers such as air pollution, smoke, dust, pollen and indoor allergens.
6. **Strengthen Healthcare Services:** Healthcare facilities should ensure the accessibility of asthma diagnostic services, medications, and patient education programs.
7. **Encourage Research for future:** Future studies should include participants from different regions to provide a broader understanding of the relationship between demographic factors and asthma symptoms. Additional research should also investigate environmental, genetic and lifestyle factors that may influence asthma prevalence and symptom frequency.

REFERENCES

- Bjerg, A., Ekerljung, L., Middelveld, R., Dahlén, S. E., Forsberg, B., Franklin, K. A., & Janson, C. (2015). Increased prevalence of symptoms of asthma but not of asthma in young adults: A population-based study. *Respiratory Medicine*, *109*(2), 209–217.
- Boulet, L. P., Lavoie, K. L., Raherison-Semjen, C., *et al.* (2022). Addressing sex and gender to improve asthma management. *NPJ Primary Care Respiratory Medicine*, *32*(56). <https://doi.org/10.1038/s41533-022-00306-7>
- Bousquet, J., Mantzouranis, E., Cruz, A. A., Aït-Khaled, N., Baena-Cagnani, C. E., Bleeker, E. R., ... & Zuberbier, T. (2010). Uniform definition of asthma severity, control, and exacerbations: Document presented for the World Health Organization consultation on severe asthma. *Journal of Allergy and Clinical Immunology*, *126*(5), 926–938.

- Dharmage, S. C., Perret, J. L., & Custovic, A. (2019). Epidemiology of asthma in children and adults. *Frontiers in Pediatrics*, 7, 246.
- Douglas, N. (1985). Asthma at Night. *Clinics in Chest Medicine*, 6(4), 663-674.
- Dai, Y., & Li, Y. (2025). Association between occupational dust exposure and asthma prevalence in a nationally representative US population. *Journal of International Medical Research*, 53(9). <https://doi.org/10.1177/03000605251371280>
- Dutt, D., Srinivasa, D. K., Rotti, S. B., Sahai, A., & Konar, D. (1996). Effect of indoor air pollution on the respiratory system of women using different fuels for cooking in an urban slum of Pondicherry. *Indian Journal of Medical Sciences*, 9(3), 113–117.
- Fuseini, H., & Newcomb, D. C. (2017). Mechanisms driving gender differences in asthma. *Current Allergy and Asthma Reports*, 17(3), 19. <https://doi.org/10.1007/s11882-017-0686-1>
- Global Initiative for Asthma. (2025). *Global strategy for asthma management and prevention*. <https://ginasthma.org>
- He, Z., Feng, J., Xia, J., & Wu, Q. (2020, 2). Frequency of Signs and Symptoms in Persons With Asthma. *Respiratory Care*, 65(2), 252-264.
- Katsoulis, K., Kostikas, K., & Gourgoulialis, K. I. (2017). Nocturnal asthma: Clinical significance and management. *Current Opinion in Pulmonary Medicine*, 23(1), 37–43.
- McHugh, M., Symanski, E., Pompeii, L., & Delclos, G. (2009). Prevalence of Asthma among Adult Females and Males in the United States: Results from the National Health and Nutrition Examination Survey (NHANES), 2001–2004. *Journal of Asthma*, 46(8), 759-766.
- Postma, D. S. (2007). Gender differences in asthma development and progression. *Gender Medicine*, 4(Suppl. B), S133–S146. [https://doi.org/10.1016/S1550-8579\(07\)80054-4](https://doi.org/10.1016/S1550-8579(07)80054-4)
- Schatz, M., & Camargo, 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(3), 242–247.
- Scherzer, R., & Grayson, M. H. (2018). *Heterogeneity and the origins of asthma*. *Annals of Allergy, Asthma & Immunology*, 121(4), 400–405.
- To, T., Stanojevic, S., Moores, G., Gershon, A. S., Bateman, E. D., Cruz, A. A., & Boulet, L. P. (2012). Global asthma prevalence in adults: Findings from the Global Asthma Network. *The Lancet*, 380(9842), 1555–1563.
- Tollefsen, E., Langhammer, A., Romundstad, P., Bjermer, L., Johnsen, R., & Holmen, T. L. (2007). Female gender is associated with higher incidence and more stable respiratory symptoms during adolescence. *Respiratory Medicine*, 101(5), 896–902. <https://doi.org/10.1016/j.rmed.2006.09.018>
- Yung, J. A., Fuseini, H., & Newcomb, D. C. (2018). Hormones, sex, and asthma. *Annals of Allergy, Asthma & Immunology*, 120(5), 488–494. <https://doi.org/10.1016/j.anai.2018.01.016>
- Zein, J. G., Udeh, B. L., Teague, W. G., Koroukian, S. M., Schlitz, N. K., & Erzurum, S. C. (2017). Gender and age-related differences in asthma control and severity. *Current Opinion in Pulmonary Medicine*, 23(1), 81–86.