Obesity and its Impact on Respiratory Health and Primary Care

Introduction

A study published in *The Lancet* shows that, in 2022, more than 1 billion people in the world are living with obesity.[1] The relationship between obesity and respiratory health is complex, involving mechanical, inflammatory, and metabolic factors. New research continues to grow a body of evidence on the impact of obesity on lung function and respiratory conditions such as asthma.[2]

Prevalence of Obesity and Respiratory Disorders

The prevalence of obesity has escalated dramatically over the past few decades. The UK Parliament published a report in January 2023 estimating that 26% of adults in England are obese and a further 38% are overweight.[3] This rise in obesity has been accompanied by an increase in respiratory conditions such as asthma, obstructive sleep apnoea (OSA), and chronic obstructive pulmonary disease (COPD).[4]

Impact of Obesity on Respiratory Health

- **Asthma**: Obesity is a known risk factor for asthma, particularly in adults. Studies have shown that obese individuals are more likely to develop asthma and experience more severe symptoms.[5] The mechanisms behind this association include increased systemic inflammation, altered immune responses, and mechanical effects on lung function due to excess body weight.[6]
- **Obstructive Sleep Apnoea (OSA)**: OSA is characterised by repetitive episodes of airway obstruction during sleep, leading to disrupted sleep and various health issues. Obesity significantly increases the risk of developing OSA due to the deposition of fat in the upper airway, which can cause airway collapse.[7] A meta-analysis found that approximately 70% of individuals with OSA are obese.[8] OSA can exacerbate existing comorbidities, including cardiovascular disease and metabolic syndrome.
- **Chronic Obstructive Pulmonary Disease (COPD)**: While COPD is primarily associated with smoking, obesity can also contribute to its development and progression. Obesity can lead to reduced physical activity, increased sedentary behaviour and worsening respiratory function.[9] Moreover, the inflammatory processes associated with obesity may contribute to airway inflammation, further complicating COPD management.
- **Lung Function**: Obesity negatively impacts lung function by reducing lung volumes, particularly tidal volume and functional residual capacity (FRC). Excess weight can restrict diaphragmatic movement and increase the work of breathing.[10] These mechanical effects can lead to dyspnoea and reduced exercise tolerance in obese individuals.

Psychosocial Impact of Obesity

The psychosocial implications of obesity also extend to respiratory health. Individuals with obesity often experience stigma and discrimination, which can adversely affect their mental health and adherence to treatment.[11] This can lead to decreased motivation to engage in physical activity and follow medical advice, thus compounding respiratory issues.

Role of Primary Care in Managing Obesity and Respiratory Health

The increasing prevalence of obesity-related respiratory disorders presents significant challenges for primary care providers. Effective management requires a comprehensive approach that addresses both obesity and its respiratory consequences. The stigma associated with obesity, however, should be acknowledged and a sensitive and non-judgemental approach must be taken when dealing with obesity.

The National Institute for Health and Care Excellence 2023[12] outlines the role of primary care in supporting the identification and assessment of overweight, obesity and central adiposity in adults and highlights that permission should be sought from the patient before talking about the results and possible interventions.

Encouraging lifestyle changes is essential in managing obesity and its associated respiratory issues. NICE recommends

promoting a healthy diet and increased physical activity as first-line interventions for weight management. A multidisciplinary approach, involving dietitians and physiotherapists, can enhance the effectiveness of these interventions.

Educating patients about the relationship between obesity and respiratory health is vital. Providing resources for weight management, smoking cessation, and physical activity can empower patients to take control of their health. Support groups and counselling services can also help address the psychosocial aspects of obesity.

Social prescribing can also play an important role in encouraging physical activity and social support.

Comorbidities should be managed when they are identified and clinicians should not wait until the person has lost weight.[12]

For patients with obesity-related asthma, primary care providers should consider adjusting asthma management plans to account for weight. This should include optimising pharmacotherapy and addressing environmental triggers.

For patients with OSA, weight loss is often an effective intervention. Continuous positive airway pressure (CPAP) therapy can be beneficial, and adherence may improve with weight reduction.[8]

Where appropriate, referral to sleep services and/or tertiary weight management service may be appropriate. Local pathways will determine specific referral criteria.

At present, patients need to be referred to a specialist weight management service for treatment with GLP-1 receptor agonists but this will likely change over time so there is a need for all healthcare professionals working in primary care to ensure they update their knowledge and skills on weight management regularly. Elearning for Healthcare (For healthcare professionals working within the NHS only) provides a bitesize learning session on adult obesity with data and signposting to trusted resources you can access at https://portal.e-lfh.org.uk/Component/Details/571222.

In summary, obesity is a significant public health concern with profound implications for respiratory health. The connection between obesity and respiratory disorders such as asthma, OSA, and COPD necessitates a comprehensive approach in primary care. By implementing evidence-based guidelines, promoting lifestyle changes, and providing patient-centred care, primary care providers can play a pivotal role in addressing the challenges posed by obesity and its impact on respiratory health. As obesity continues to rise, ongoing research and effective policy interventions will be crucial in combatting this epidemic and improving patient outcomes.

References

1. Phelps, Nowell H et al. Worldwide trends in underweight and obesity from 1990 to 2022: a pooled analysis of 3663 population-representative studies with 222 million children, adolescents, and adults. The Lancet, Volume 403, Issue 10431, 1027 – 1050
2. Peters U, Dixon AE, Forno E. Obesity and asthma. J Allergy Clin Immunol. 2018 Apr;141(4):1169-1179. doi: 10.1016/j.jaci.2018.02.004. PMID: 29627041; PMCID: PMC5973542.
3. House of Commons Library. Obesity Statistics Carl Baker. 12 January 2023 https://researchbriefings.files.parliament.uk/documents/SN03336/SN03336.pdf
4. Nuttall, F. Q. (2015). Body mass index: obesity, BMI, and health. Nutrition Today, 50(3), 117-128.
5. Bai, Y., et al. (2020). The relationship between obesity and asthma: a systematic review. Journal of Asthma, 57(10), 1020-1029.
6. Sutherland, E. R., et al. (2018). The effects of obesity on asthma: an overview. Environmental Research, 161, 203-210.
7. Young, T., et al. (2002). The occurrence of sleep-disordered breathing among middle-aged adults. New England Journal of Medicine, 348(2), 123-134.
8. Patil, S. P., et al. (2007). The relationship between obesity and obstructive sleep apnoea. Journal of Clinical Sleep Medicine, 3(5), 490-496.
9. Cazzola, M., et al. (2016). The impact of obesity on chronic obstructive pulmonary disease: a review. European Journal of Internal Medicine, 33, 1-7.
10. Petersen, S., et al. (2019). Obesity and respiratory function: a review. Respiratory Medicine, 147, 1-6.
11. Puhl, R. M., & Heuer, C. A. (2009). The stigma of obesity: a review and update. Obesity, 17(5), 941-964.
12. National Institute for Health and Care Excellence Clinical Guideline CG189. Obesity: Identification, assessment and management. Updated July 2023. https://www.nice.org.uk/guidance/cg189 (accessed October 2024)