Measuring asthma, respiratory symptoms, and changes over time.

David M. Mannino
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WE ARE ALL FAMILIAR with the headlines, in both the media and the medical literature, that asthma prevalence has been increasing dramatically in recent years.1,2 This is happening in the face of decreasing trends of outdoor air pollution and tobacco smoking, factors linked to asthma incidence or asthma severity.3 Over this same period of time, other factors potentially linked to asthma, such as obesity or physical inactivity, have been increasing.4 In recent years in the US, there has been a divergence of trends in different measures of asthma, with asthma prevalence continuing to increase, but with asthma hospitalizations and deaths trending downward.5 This divergence suggests that different factors influence these different measures, perhaps related to distinct phenotypes of asthma that are all being called 'asthma', or prevalent asthma containing a higher proportion of mild cases in recent years.

The article by Brøgger et al. in this issue of the Journal sheds some light on this problem, comparing data from two similar Norwegian populations surveyed in 1972 and in 1998/1999.6 The authors had previously described a three-fold increase in asthma prevalence between the two surveys.7

The measure of asthma in this survey, as is also found in most large population-based surveys, is based on self-report of physician-diagnosed disease. This measure thus depends on the following chain of events (assuming that the majority of asthma diagnoses are based on history rather than physiologic measurements or severe exacerbations resulting in hospitalizations): subjects having symptoms, subjects recognizing these symptoms as being abnormal, subjects reporting these symptoms to a physician, physicians recognizing these symptoms as being abnormal, physicians accurately making a correct diagnosis, subjects accepting that this diagnosis has been made, and finally, subjects accurately reporting that they have been diagnosed when asked about this during the survey. While it is impossible to look at every event in this pathway, the current novel analysis by Brøgger et al. provides some important information.

Figure 4 provides the most compelling evidence of a shift in the willingness of physicians to diagnose (and subjects to accept and report this diagnosis) over this time period. In 1972, about 10% of people listing six respiratory symptoms reported an asthma diagnosis, compared to over 30% in 1998/1999. Another way of looking at this is the observation that in 1998/1999 a person needed only two symptoms (as opposed to six in 1972) to have a 10% chance of being diagnosed with asthma. Another interesting aspect of this part of the analysis, reported in the text, was that smokers were less likely to have a diagnosis of asthma for any given number of symptoms, compared to never and former smokers.

Asthma is a heterogeneous disease, and in populations there are probably several different subtypes of asthma and, in addition, considerable overlap with chronic obstructive pulmonary disease and other respiratory diseases. Another key message to take away from this paper is that the 'traditional' respiratory symptoms of asthma (wheezy episodes) and other chronic lung diseases (cough, phlegm and dyspnea) overlap considerably. Better understanding of respiratory symptoms and how patients report them, along with their link to diagnosed lung disease will lead, ultimately, to improved diagnosis, classification, treatments, and outcomes.

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References