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Title: Shortness of breath associated with chronic conditions among those with and without asthma or COPD

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Body: Background: Some chronic conditions may result from similar underlying mechanisms or may exacerbate lung disease suggesting the investigation of disease inter-relationships. We sought to determine if SOB was more common among adults with chronic conditions and to examine this association among those with and without asthma or COPD. Methods: In 2010 we conducted a cross-sectional mail survey of rural households as part of the Saskatchewan Rural Health Study. One adult per home provided information about each adult living in the home. There were 8261 adults from 4624 households (42% participation) included. We examined the associations between reported diagnosed chronic conditions (diabetes, cardiovascular disease, and sleep apnea) and SOB after adjusting for potential confounders and stratifying by history of doctor-diagnosed asthma or COPD. High SOB was defined by a score of ≥ 3 on the MRC breathlessness scale. Results: The respondents' mean age was 56 years (SD=16 years) with 51% of the population being female. Approximately 14% had a MRC score ≥ 3 . After adjustment, there was increased risk of high MRC score associated with the presence of diabetes [odds ratio (OR)=1.68, 95% confidence interval (CI)=1.32-2.14], cardiovascular disease (OR=2.18, 95%CI=1.80-2.65), and sleep apnea (OR=2.19, 95%CI=1.60-3.00). The associations with SOB were weaker among those with asthma or COPD with the exception of that for sleep apnea, which was stronger. Conclusions: Some conditions were associated with high SOB among those with and without a history of lung disease. These relationships may result from common pathways, possibly inflammatory, and may precede more serious chronic lung disease.