Short-acting $\beta_2$-agonist prescriptions are associated with poor clinical outcomes of asthma: the multi-country, cross-sectional SABINA III study

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Abstract

**Background** To gain a global perspective on short-acting $\beta_2$-agonist (SABA) prescriptions and associated asthma-related clinical outcomes in patients with asthma, we assessed primary health data across 24 countries in five continents.

**Methods** SABINA III was a cross-sectional study that employed electronic case report forms at a study visit (in primary or specialist care) to record prescribed medication(s), over-the-counter (OTC) SABA purchases and clinical outcomes in asthma patients ($\geq 12$ years old) during the past 12 months. In patients with $\geq 1$ SABA prescriptions, associations of SABA with asthma symptom control and severe exacerbations were analysed using multivariable regression models.

**Results** Of 8351 patients recruited ($n=6872$, specialists; $n=1440$, primary care), 76.5% had moderate-to-severe asthma and 45.4% experienced $\geq 1$ severe exacerbations in the past 12 months. 38% of patients were prescribed $\geq 3$ SABA canisters; 18.0% purchased OTC SABA, of whom 76.8% also received SABA prescriptions. Prescriptions of 3–5, 6–9, 10–12 and $\geq 13$ SABA canisters were associated with increasingly lower odds of controlled or partly controlled asthma (adjusted OR 0.64 (95% CI 0.53–0.78), 0.49 (95% CI 0.39–0.61), 0.42 (95% CI 0.34–0.51) and 0.33 (95% CI 0.25–0.45), respectively; $n=4597$) and higher severe exacerbation rates (adjusted incidence rate ratio 1.40 (95% CI 1.24–1.58), 1.52 (95% CI 1.33–1.74), 1.78 (95% CI 1.57–2.02) and 1.92 (95% CI 1.61–2.29), respectively; $n=4612$).

**Conclusions** This study indicates an association between high SABA prescriptions and poor clinical outcomes across a broad range of countries, healthcare settings and asthma severities, providing support for initiatives to improve asthma morbidity by reducing SABA overreliance.