Background

- Asthma affects more than 330 million people worldwide, causing 250,000 deaths each year and enormous economic burden.
- International guidelines (NICE & BTS/SIGN) recommend the use of self-management education for treating people with asthma.
- Self-management (SMI) for asthma could involve varying hours of support from healthcare professionals, different delivery modes or multidisciplinary teams.
- We compare and rank the effects of the four models of SMI for managing asthma among adults and children with an aim to guide policy-makers on implementing the most efficient model.

Methods

We categorised SMIs into four types reflecting varying degree of support by health professionals: a) case management (CM), b) intensive self-management (ISM), c) supported self-management (SSM) and d) pure self-management (PSM) [See handout for full definitions].

Primary outcomes include health care utilisation (HCU) (i.e. hospitalisation/accident and emergency visit, or any unscheduled visit) and quality of life (QoL).

Analysis was conducted using Bayesian random-effects NMAs and normal likelihood for both outcomes. Models were fit in OpenBugs (version 3.2.3) using uninformative prior distributions. Inconsistency analysis ensured consistency of the network.

Meta-regressions, subgroup analysis (by age) and covariate-adjusted network analyses were performed to assess the effects of pre-specified covariates.

Results

105 randomised controlled trials (comprising 27,767 participants) between 2000 and 2019 met our inclusion criteria.

**Figure A** Network of evidence for unscheduled healthcare use

HCU: both case-management (SMD = 0.18, 95% CrI: -0.32 to -0.05) and intensive self-management (SMD = -0.30, 95% CrI: -0.46 to -0.15) were significantly better than usual care and other SMIs (figure A)

QoL: only intensive self-management (SMD = 0.54, 95% CrI: 0.11 to 0.96) showed a statistically significant increase when compared to usual care

**Figure B** Covariate-adjusted network analysis for asthma severity (Key: S=Severe, NS=non-severe)

- The ‘severity at baseline’ was the strongest explanation of heterogeneity and inconsistency in meta-regression analyses above table.
- Excluding studies mainly involving non-severe patients at baseline, resulted in a 32% reduction in heterogeneity for HCU and 26% for QoL.

**Figure C** Covariate-adjusted NMAs (Figure B) showed both ISM (SMD=-0.32, 95% CrI: -0.53, -0.11) and CM (SMD=-0.32, 95% CrI: -0.50, -0.16) as significant for HCU in studies involving patients with more severe symptoms of asthma.

Conclusions

- This is the largest evidence-base to date by use of network analysis to assess the relative merits of the different SMI models in the treatment of asthma.
- Our findings substantially strengthen the clinical basis for the use of SMIs and particularly intensive self-management as first-choice choices for treatment of asthma amongst adults, adolescents and children with asthma
- This analysis contributes a helpful perspective to aid the development of more accurate guidelines for asthma self-management that will help improve the design concepts of new self-management programmes and influence policy-based decisions for clinical practitioners

References


