

## Effectiveness of mHealth Interventions for Asthma Self-Management: A Systematic Review and Meta-Analysis

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### Abstract

To assess the effectiveness of mHealth interventions for asthma self-management, we conducted a systematic review and meta-analysis of relevant studies identified by a search of English and Chinese databases. 18 studies were included in meta-analysis, and the results showed that mHealth interventions (vs routine care) improved the level of asthma control and adherence to treatment, and reduced exacerbation rate and admission rate. Evidence from this study shows that mobile health-based interventions may be useful tools for asthma self-management.

**Keywords:** Asthma, mHealth, Self-management

### Introduction

Asthma is a chronic disease with reversible narrowing of the airways<sup>[1]</sup>. Self-management is important to keep symptoms controlled and to prevent exacerbations. mHealth is likely to play an increasing important role in light of improving self-management and control of chronic diseases<sup>[2]</sup>. This study aimed to assess the efficacy of mHealth interventions for asthma self-management.

### Methods

We systematically searched English and Chinese databases (Update to December 2016) with asthma and mhealth interventions. Mobile health refers to the use of wireless, portable Information and Communication Technologies (such as smart phones, personal digital assistants, tablet computers) to support health and health care. We include randomized controlled trials (RCTs) and quasiexperimental studies with adults and children. The data on the features included health-related outcomes (asthma control, exacerbation rate, admission rate) and adherence to treatment were extracted. Meta-analysis and narrative synthesis were used.

### Results

18 studies were included in meta-analysis : 7 in adults, 9 in children and 1 in individuals from both age groups. These studies followed patients for between 3 and 12 months. Patients in the intervention group were given one of a variety of mHealth technologies. Meta-analysis showed that mHealth interventions (vs routine care) improved the level of asthma

control ( $P<0.001$ ) and adherence to treatment( $P<0.05$ ), and reduced exacerbation rate and admission rate(  $P<0.05$ ).

### Conclusions

Evidence from this study shows that mHealth-based interventions may be useful tools for asthma. Further studies are still needed to identify the features that are associated with adoption of mHealth and those that improve health outcomes.

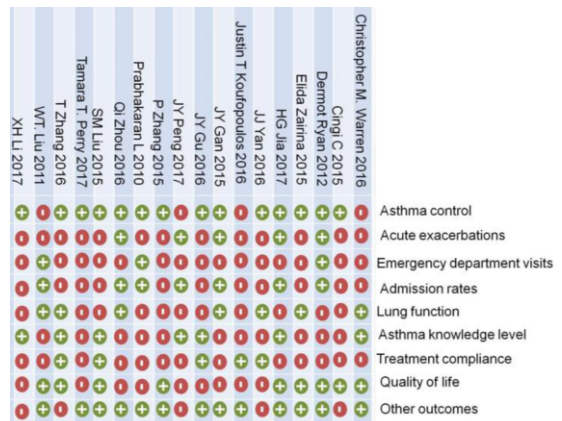


Figure 1–Summary of included studies

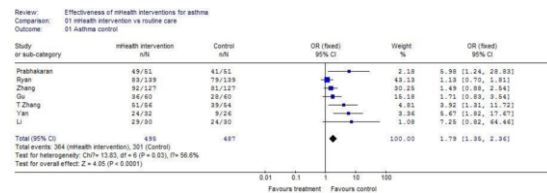


Figure 2–Meta-analysis of the effect of mHealth intervention vs routine care on asthma control

### References

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