Evaluation of myCOPD, a digital self-management technology for people with COPD, in a remote and rural population

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Introduction
The prevalence of chronic obstructive pulmonary disease (COPD) in poor, remote, and rural populations is twice that of cities (15.4% versus 8.4%)1. COPD costs an estimated £1.9bn per year to the NHS2 and is characterised by exacerbation frequency and severity. Disease education and symptom self-management are critical to reducing the healthcare burden for patients with COPD.

myCOPD

myCOPD is a digital self-management app designed to support patients with COPD (figure 1). It has a series of features including symptom scoring, educational videos and a virtual pulmonary rehab course. The myCOPD technology offers potential benefits in rural populations who may struggle to engage with central health care provision.

Aim
The NHS Highland TEC team, Respiratory department, and University of the Highlands and Islands evaluated myCOPD for its ability to improve patient care in NHS Highland, a predominantly remote and rural population. We evaluated its effectiveness at reducing exacerbations by measuring hospital admissions, inpatient bed days and other NHS service usage for patients who use the app.

Method
Participants were recruited between 1st May-31st October 2019. Data was recorded for each participant regarding their use of the different features of the app. Participant NHS service use was recorded 12 months before and up to 12 months after myCOPD activation. To account for differences in activation rates and the early termination of the study due to COVID-19, data was reported as daily outcome measures (e.g., admissions/day).

Results

Enrollment
Participants were enrolled by healthcare professionals as part of their usual care.

Figure 2
Study flow chart.

Offered myCOPD (n=140)

- Declined (n=20)
  - n=6 No device
  - n=5 No internet access
  - n=4 Lacked confidence using technology
  - n=3 No email address
  - n=2 Not interested

Enrolled (n=120)

- Died during study (n=7)

Included in study (n=113)

Patient Demographics

<table>
<thead>
<tr>
<th>Participant Characteristics</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (%) Male</td>
<td>47.5</td>
</tr>
<tr>
<td>Female</td>
<td>52.5</td>
</tr>
<tr>
<td>Age (Average)</td>
<td>67</td>
</tr>
<tr>
<td>Gold Score (Average)</td>
<td>2.7</td>
</tr>
<tr>
<td>Urban-Rural classification Score (Average)</td>
<td>4.23</td>
</tr>
<tr>
<td>SIMD decile score (Average)</td>
<td>5.17</td>
</tr>
</tbody>
</table>

Table 1
Participant Characteristics as an average of the whole population

Engagement

Participant app use was defined by their use of the different modules (figure 3A) and the symptom scoring feature (figure 3B). Engagement with myCOPD app was not dependant on participant demographics including age, disease severity, socioeconomic status or rurality.

Figure 3

78% of participants activated myCOPD, 70% recorded their symptom score at least once, and 45% used additional modules at least once.

Symptom score | CAT score | Pulmonary rehab | Inhiler training | Education course
--- | --- | --- | --- | ---
70% | 45% | 31% | 8% | 19%

Figure 4
The percentage of patients who used the different features of the app at least once

Subgroup findings

Subgroup analysis of hospital daily bed days and admissions incidence does suggest that those participants that had very high use of the app, by either module use (figure 6B) or frequency of symptoms scoring (figure 6A) did show a reduction in bed days.

Discussion

Overall, these data indicate that while myCOPD enrolment and engagement is viable, there is not a statistically significant health benefit to using the app, within NHS Highland on a whole group level. However, it may be of benefit to individuals with higher levels of engagement. These findings provide a rationale for further research to evaluate the benefits of sustained myCOPD engagement on reducing both exacerbation and hospital admission rates.

References


Acknowledgments

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