Determinants of the cost-effectiveness of telemedicine: Results from a systematic review and multivariable analysis

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INTRODUCTION

Telemedicine holds the promise to increase access-to-care at a lower cost. Yet, for years, the evidence of telemedicine’s cost-effectiveness has been scarce, explaining in part why the recourse to this type of medical delivery remained low.

We conducted a systematic screening of economic evaluations of telemedicine and regression analysis to determine: (1) the characteristics of telemedicine studies; (2) the determinants of economically efficient telemedicine interventions.

METHODS

Figure 1: Flow diagram of the different phases of the systematic screening process.

EMPIRICAL STRATEGY

We performed descriptive statistics on the full sample. Using Pearson’s chi-square, we tested whether the distribution of these variables are significantly different for studies that found the telemedicine intervention dominant, compared to studies which found usual care dominant.

We explained the determinants of economically dominant telemedicine interventions using a multivariable logit model.

RESULTS

Table 2: Determinants of the cost-effectiveness of telemedicine interventions (in odd-ratios).

Table 1: Descriptive statistics of ten years of economic evaluation of telemedicine.

<table>
<thead>
<tr>
<th>Full Sample</th>
<th>Usual care</th>
<th>Telemed.</th>
<th>(\chi^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td>Percent</td>
<td>percent</td>
<td>percent</td>
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Study Characteristics

Telemonitoring | 84.10 | 73.17 | 60.87 | 1.99

Chronic condition | 70.51 | 82.93 | 66.09 | 4.12\* \(p<5\%\)

Mental condition | 17.95 | 12.20 | 20.00 | 1.25

Cardiac condition | 9.62 | 14.83 | 7.83 | 1.61

Respiratory condition | 10.60 | 12.20 | 10.43 | 0.10

Societal perspective | 28.21 | 17.07 | 31.7 | 3.40** \(p<1\%\)

Publication Year

Before and in 2012 | 60.00 | 17.07 | 15.85 | 0.05

After and in 2013 | 43.87 | 82.93 | 84.35 | -

Impact factor | 28.49 | 18.51 | 33.04 | 2.66

72.6% of economic studies report that the telemedicine intervention dominates economically the control group.

The cost-effectiveness of telemedicine is independent of the medical domain. We found no significant effect of the publication year, signifying that the nature of the evidence has not changed overtime.

All things equal, cost-effectiveness of telemedicine is significantly negatively associated with indicators of quality. Yet, reporting cost-effectiveness of telemedicine is, ceteris paribus, positively related to the odds of publishing in journals with high impact factors.

CONCLUSION

- In summary, published evidence has found that telemedicine is overall cost-effective, regardless of the medical field.
- Articles reporting telemedicine as a dominant intervention are more likely to be published in high impact factor journals.
- However, articles with higher standards of economic evaluation are less likely to report an intervention as being dominant.