TELEHEALTH IN COPD: THE GP PERSPECTIVE

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Abstract

Objectives: There is increasing interest in using assistive technologies in the management of chronic diseases. We aim to establish the views of the UK GPs on the use of telehealth in the management of COPD. Methods: A randomly selected group of GPs in England were invited to complete an online questionnaire. GPs were asked to rate their response on a 5-point Likert scale and to provide free-text comments with each question. Free text comments were analysed thematically.

Results: 100/264 (38%) of GPs returned completed questionnaires. GPs were concerned about the cost effectiveness of telehealth, the potential of increasing their workload and poor communication with telehealth service providers.

Conclusion: A better engagement of GPs is needed in order to integrate telehealth interventions successfully in primary care settings.

Keywords: COPD; general practitioner; telehealth; telemonitoring; United Kingdom.

Introduction

Chronic Obstructive Pulmonary Disease (COPD) is an umbrella term which includes Chronic Bronchitis and Emphysema, mainly caused by smoking, and manifests as progressive breathlessness, cough and excessive sputum production. It is a disabling disease with around a million patients on the general practitioners’ (GP) register in England diagnosed with this condition. However, it is estimated that about three million people in the UK have COPD and that the prevalence rates are increasing, especially in women. COPD is the third largest cause of death from respiratory diseases, accounting for almost one quarter of all respiratory deaths and the fifth leading cause of death in the UK and fourth worldwide.

The direct cost to the UK National Health Service (NHS) related to COPD is estimated to be between £810 million and £930 million a year with more than half of these costs related to the provision of care in hospital. An exacerbation of COPD is one of the most common reasons for hospitalisation. It is estimated that in the UK 1 in 8 admissions is due to COPD, making it the second largest cause of unplanned admissions. Furthermore, COPD accounts for more than one million 'bed days' per year. The indirect cost of COPD is also substantial as COPD accounts for more time off work than any other illness, amounting to an estimated 24 million lost working days per annum.

In recent years, there has been growing interest in the use of technology to enable patients to live independently and avoid expensive hospitalisation and to help workforces cope with increasing workload. This interest is fuelled by increasing demands of an ageing population, increasing prevalence of some long term conditions and the pressure on the healthcare budget. The use of assistive technology such as telehealth, which involves the remote monitoring and support of patients at home, was endorsed by the UK Department of Health (DOH) as a valuable tool to support patients with long term conditions to receive care in the community. The Whole System Demonstrator Programme (WSDP) has provided some evidence on the effect of telehealth in three long-term conditions: COPD, heart failure and diabetes. This trial suggested benefits in reducing mortality and hospitalisations in these three chronic conditions with a 45% reduction in mortality; 21% reduction in emergency admissions; 24% reduction in elective admissions; 15% reduction in Accident and Emergency department visits; 14% reduction in bed days and 8% reduction in tariff costs. Findings from the WSDP were the catalyst to promote investment in telehealth provision in many parts of the UK. This is despite criticism to the
design of this study and uncertainty about its findings which contradicted other telehealth trials that showed lack of benefit, or even harm, from telehealth.\textsuperscript{1,12,13}

In England, COPD remote monitoring is usually coordinated by community matrons or long-term condition nurses, with the aim of improving self-management, plus early detection and effective support during exacerbations. It is hoped that this will translate to early detection of flare ups, early intervention, and admission avoidance. GPs are often consulted on clinical issues arising from telemonitoring. Despite the pivotal role of GPs, most telehealth studies provide little insight into what GPs thought of telehealth and how care was coordinated between telehealth teams and GPs. The aim of this study was to gain insight of GPs views on the application of Telehealth for COPD in community settings in England.

Methods

A mixed methods approach was used with participants completing an online questionnaire requiring both Likert and open ended responses. Participants were selected from Clinical Commissioning Groups (CCGs) chosen pragmatically to represent various geographical locations and NHS authorities within the UK regardless of their current or past involvement in telehealth services. CCGs are NHS organisations led by groups of general practices in a specific geographical area that work together to plan and design health services for their patients.

In March 2013 there were 211 CCGs across England and ten were selected for this study, three from the north of England, three from the Midlands and four from the South. Within each region the choice of the CCGs depended on how many GP emails were listed under each specific CCG (some CCGs have no emails attached to them) and whether emails were identified as GP emails. The NHSmail portal was used to search for the CCGs and identify GP emails. eMails were sent to the 264 GPs identified in the 10 CCGs inviting them to participate in the Web-based online survey.

A literature search revealed no validated questionnaire available for use in this survey and a questionnaire was developed in consultation with a group of five GPs. No personal indentifying information was collected. Given the nature of this survey of opinions there was no validation of the questionnaire beyond face validation. The questionnaire was subsequently piloted on 13 GPs before the final deployment, and minor revision of the wording of some questions was made. The questionnaire containing 8 items was emailed to 264 GPs for online completion using Survey Monkey. For each of the 8 questions, GPs were asked to rate their response on a 5-point Likert scale from “strongly agree” to “strongly disagree” and provide free-text comments with each question. A thematic analysis of free text comments was carried out manually. Responses to the questionnaire were collected on the survey website which was open for one week in September 2013.

Ethical approval was deemed unnecessary for this anonymous opinion survey where participants’ identifiers were not used. Consent to participate in the survey was included in the invitation e-mail with a brief explanation of the aim of the survey.

Statistical analysis was performed using Fischers exact test and contingency tables with alpha set at 5%.

Results

One hundred of the 264 GPs completed the online questionnaires within the allotted time, giving a response rate of 38%. The survey questions and responses are provided in figure 1. An unplanned opportunity to ascertain possible responder bias occurred when ten GPs at a local meeting indicated that they had not completed the online survey. They were asked to complete the questionnaire on paper and return it by post, without including any identifying information. Seven of them completed the questionnaire. There was no clear difference between the responders and the non-responders.

The responses of those GPs identified in the first question as having a good understanding of the principles of telehealth (29) were compared with those who reported poor knowledge or were undecided (71). Statistically significant differences between the two groups of GPs were noted for questions 2, 3 and 8. GPs who think they have good knowledge of the principles of telehealth in COPD believe that they understand which subset of COPD patients are more likely to benefit from referral to telehealth (p <0.001); receive clear communications from the telehealth nurses about their patients (p = 0.007), and believe that telehealth empowers their patients and reduces their dependency on healthcare professionals (p <0.001). There was no difference in responses for perception of
I have a clear understanding of the principles of Telehealth in COPD management

I know which COPD patient might benefit from a referral to the local Telehealth service

I receive clear communication from the community Matrons when one of my patients go on COPD Telehealth

I am convinced of the potential positive impact of Telehealth on COPD patients and therefore would recommend it to...

The information gathered from Telehealth would be useful to me in making important clinical decisions

The addition of Telehealth in a selected group of COPD patients is an effective use of resources

Telehealth monitoring of my COPD patients would reduce my workload and free me to concentrate on other clinical duties

Telehealth would empower my patients and give them the confidence to look after their health and reduce their dependency on health...

Figure 1. Survey questions and a breakdown of responses.
the overall positive impact of telehealth on COPD patients \( (p = 0.12) \), the value of the information gathered from telehealth in making important clinical decisions \( (p = 0.08) \), the cost effectiveness of the telehealth service \( (p = 0.45) \), or its impact on workload \( (p = 1.00) \).

More than 110 comments were received which were analysed thematically and presented in the discussion.

**Discussion**

The qualitative analysis of the GPs comments provides the basis to understanding their attitude towards telehealth in COPD. The two dominant themes were: doubt about telehealth benefits and poor knowledge of the principles of telehealth. GPs also expressed concern about increased workload, lack of involvement, and poor communication with telehealth service providers:

**Doubt about the clinical benefits and cost effectiveness of telehealth:**

GPs expressed unambiguous concerns about the cost-effectiveness of telehealth in disease management. This is not surprising given the lack of clear evidence of benefit despite the widely quoted merits of telehealth. The GPs’ concern about the cost effectiveness of telehealth is supported by an economic evaluation of WSDP. According to this nested analysis, telehealth was found not to be a cost effective addition to standard support and treatment.\(^4\)

Only 23% of GPs agreed that telehealth might have a positive impact, 25% agreed about its cost-effectiveness and 28% thought the information gathered from telehealth would be clinically useful to them. There was no statistically significant difference in responses between GPs who believe they have good knowledge of the principles of telehealth and those GPs who have poor knowledge in relations to their perception of the clinical usefulness of the telehealth data and its cost effectiveness in COPD management. GPs argued that traditional general practice is delivering a safer, more efficient and holistic service without the need for high-tech alternatives:

"What is wrong with patients phoning the GP when they begin to start feeling more ill than usual?"

"Those who are able to manage don't need it - those who cannot manage are unable to use it"

"I think there is little evidence of effectiveness; it is inevitably risk averse, not 'holistic' and merely fashionable"

"Is there any evidence for money saving? Or is it another way to stop clinical staff having any proper patient contact?"

GPs also suspected a strong political and business influence in promoting telehealth in the management of long-term conditions:

"Telehealth is driven by it being big business i.e. it is entirely profit-driven - analogous to Big Pharma and new drugs"

"Seems like another managerial gimmick that have regularly come and gone in my 30+ years in the job"

"It appears to offer no savings and is expensive, untested, over hyped and purely being done for political reasons. The pilots should have been fully evaluated before the contracts were awarded. I wish the money went instead into proven benefits"

"Telehealth is a politically invited exploitation of NHS, wasting desperately needed revenue that could be used to support better evidenced interventions or even increase social care support to allow earlier hospital discharge. Telehealth should be limited to studies large enough to confidently answer the questions that the WSD set out to, but did not. The mortality benefit was not sufficiently investigated. "3 million lives" is simply a political fiction to support a government politico-economic plan agreed even before the results of the WSDP were fully analysed"

**Poor knowledge of telehealth principles:**

Only 29% of the GPs indicated a clear understanding of the principles of telehealth in COPD management. A similar response was also received for the GP’s understanding of the local referral criteria to telehealth. This lack of understanding of the principles of telehealth for the majority of GPs in this survey highlights the extent of the knowledge gap that needs to be bridged:
"I have no knowledge of what it monitors or if it is available in our area"

"Never heard of it"

This poor knowledge is probably the result of many factors including the relatively recent introduction of telehealth in long term disease management and the poor engagement of telehealth technology providers with primary care teams.

**Concern about GP work load:**

Thirteen percent of the GPs thought telehealth would reduce their workload. GPs appear to worry about increasing their own workload even if hospital admissions were to be reduced, i.e. shifting the patterns of healthcare utilisation from secondary to primary care rather than a genuine reduction in healthcare utilisation. There was no difference in the perception of workload between GPs who claim good understanding and GPs who claim poor understanding of the principles of telehealth:

"Main impact could be reduced acute admissions, but that does not necessarily reduce my personal workload"

"I have been called out to look at patient with oxygen of 71% only to find pulse oximeter not working"

"Seems to generate work. At the first abnormal reading patients contact their GP so workload isn't reduced at all"

**Lack of GP engagement:**

Only 8% of GPs confirmed they receive clear communication when one of their patients is referred into the service. However, we found that GPs who believe they have a good understanding of the telehealth principles also feel they are more knowledgeable in referring patients to the local telehealth services (p<0.001) and they receive clear communication from telehealth teams compared to GPs with poor knowledge of telehealth principles (p=0.007). Some GPs commented on the lack of communication with the community matrons:

"What community matron [?] We never see ours"

"I have no idea what Community Matrons do. Decommissioning opportunity [?]"

Despite the general negativity from GPs about telehealth, 33% of GPs agreed that telehealth may empower patients and reduce their dependency on health care professionals. This perception is more so among GPs who claim good understanding of telehealth principles compared to GPs with poor understanding of telehealth principles (p <0.001). However, some GPs thought patients like telehealth because of the associated increase in the nursing contact rather than the technology input:

"Patients like it because they are lonely and so derive psychological benefits from a daily call - it also makes them feel 'looked after'"

"Telehealth 'works' because it confers 'friendship' for the lonely and vulnerable frail elderly"

The results of this survey of opinion are not surprising. Multiple studies have explored factors affecting telemonitoring acceptance among healthcare professionals. Sharma and colleagues investigated clinicians’ perceptions of telemonitoring using the concepts of Giddens’s Structuration Theory and Consequence of Modernity.15,16 Their findings showed that trust is an important factor that determined clinicians’ adoption of telemonitoring. A study on healthcare professionals’ adoption of hospital-based telemonitoring using a modified version of the Technology Acceptance Model (TAM) proposed by Davis found that organisational conditions were the most important predictor of the intention to use telemonitoring by doctors and nurses.17,18 In another study in primary care settings, the perception of support, the compatibility of telemonitoring with clinical duties and the perceived usefulness were the most influential factors in predicting the acceptance of nurses and GPs to telemonitoring.19 In our survey, the participants commented on poor communication with telemonitoring teams and raised concerns about potential incompatibility with their daily clinical duties. They also questioned the usefulness of telemonitoring by arguing against the evidence underpinning telehealth in chronic disease management. These factors help to explain their largely negative response to telehealth expressed in this survey.

This survey has a number of limitations. The number and choice of CCGs was pragmatic with 10 CCGs selected representing a diverse cross section of the geographic and demographic profile in England. The relatively small sample size may introduce bias.
It was clear from the responses that not all the GPs surveyed have had direct exposure to telehealth services even if commissioned by their CCG. However some of the questions in this survey were designed to explore the understanding of GPs of the theoretical principles of telehealth and whether they believe it could add benefits to their daily clinical practice regardless of their personal exposure to telehealth services.

We did not collect demographic information on respondents. However, we compared responses from GPs who indicated good understanding of the principles of telehealth to those who indicated poor understanding or those who were not sure. We demonstrated that there were some differences in the responses of these two cohorts. However, it is difficult to draw firm conclusions given the small sample size and in the absence of demographic information on the respondents.

Finally, a large number of responses were undecided. It was not possible to establish retrospectively whether this ambivalence reflects the lack of understanding of telehealth, the uncertainty surrounding the cost effectiveness of telehealth in chronic disease management or a combination of other factors.

Conclusion

Telehealth is an emerging concept in managing patients closer to home. The use of assistive technology in tackling the increasing demand on healthcare clearly has a place in modern healthcare provided that telehealth services effectively engage with all stakeholders. Much of the anxiety expressed in the survey reflected the poor evidence-base demonstrated in clinical trials. It is clear that greater engagement of GPs and better communications are required if telehealth is to be established as an integrated part of a holistic primary care service for patients with long-term conditions.

Acknowledgements

We would like to thank all GPs who participated in the survey, in particular Dr Spokes from Hedon Group Practice - Yorkshire, who provided guidance on carrying out the survey electronically. We would like also to thank Dr A Tamimi for providing guidance on the qualitative approach to data analysis.

Conflict of Interests

The authors declare no conflicts of interest.

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