

RESEARCH PAPER

Feasibility, acceptability and cost efficiency of using webinars to deliver first-line patient education for people with Irritable Bowel Syndrome as part of a dietetic-led gastroenterology service in primary care

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Introduction

Irritable bowel syndrome (IBS) is a non-life-threatening chronic and relapsing functional gastrointestinal disorder with a global prevalence of 11%⁽¹⁾. The burden on healthcare systems and society worldwide is substantial. Data shows that, in the UK, the estimated total annual costs for IBS treatment ranges from £45.6 million to £200 million⁽¹⁾. In the USA, 25–49% of IBS patients will

Abstract

Background: Irritable bowel syndrome (IBS) is a chronic functional gastrointestinal disorder. International research suggests dietary intervention as a first-line approach, although dietetic services are struggling to cope with demand. Digital technology may offer a solution to deliver appropriate patient education. The present study aimed to assess the feasibility, acceptability and cost efficiency of using webinars to deliver first-line IBS advice to patients as part of a dietetic-led gastroenterology service in primary care.

Methods: Patients were directed to an IBS First Line Advice webinar on a specialist NHS website. Data were collected from patients pre- and post-webinar use using an online survey.

Results: In total, 1171 attendees completed the pre-webinar survey and 443 completed the post-webinar survey. Attendees ranged from under 17 years to over 75 years. Of the attendees, 95% found the webinar easy to access and 91% were satisfied with the content of the webinar. Those with excellent or good knowledge rose from 25% pre-webinar to 67% post-webinar, and confidence in managing their condition improved for 74% of attendees. Using the webinars led to a 44% reduction in referrals for one-to-one appointments with a specialist dietitian in the first year of use. The value of the clinical time saved is estimated at £3593 per annum. The one-off cost of creating the webinar was £3597.

Conclusions: The use of webinars is a feasible, acceptable and cost-efficient way of delivering first-line patient education to people suffering with Irritable Bowel Syndrome as part of a dietetic-led gastroenterology service in primary care.

consult a primary care general practitioner (GPs) each year, with reattendance being common⁽²⁾. In the UK, despite guidance from the National Institute for Health and Care Excellence (NICE), around half of IBS patients continue to be inappropriately referred for endoscopic investigation⁽³⁾ with IBS accounting for 36% of all new patient referrals to gastroenterologists⁽¹⁾.

From 2008 onward, UK NICE guidance has recognised dietary intervention as a successful first-line approach for

IBS, with subsequent professional guidelines establishing clear pathways for the dietary treatment of IBS patients^(4,5). However, delivery of this treatment requires dietetic input and the demand currently exceeds capacity despite the use of alternative approaches, such as group sessions. Because many dietetic departments are unable to cope with demand, the burden continues to fall on GP and secondary care services^(6,7). A solution is required to deliver high-quality dietetic advice to the large patient population as a first-line intervention, freeing up time for specialist care of more complex or intractable cases.

As a result of the advancement and broad adoption by the public of digital technologies, the UK National Health Service (NHS) is embracing digital transformation as a way to meet increasing demand in a financially restricted environment^(8,9). Up to 75% of the population now seek health information online and convenient access is becoming an expectation⁽¹⁰⁾. Virtual education shifts responsibility to the patient and can overcome many of the barriers to face-to-face education, such as lack of mobility or time, distance to travel to attend appointments, lack of funds, long waiting lists for appointments and caring commitments^(10,11). Evidence suggests that some patients actually prefer remote contact with healthcare providers rather than travel to appointments⁽¹²⁾. The use of prerecorded on-demand webinars allows access to virtual health education for unlimited numbers of patients, enabling self-care using appropriate expert formulated advice at first point of need, and potentially releasing time across the healthcare system.

This project aimed to assess the feasibility, acceptability and cost efficiency of using webinars to deliver first-line advice to patients with suspected or newly diagnosed IBS.

Materials and methods

A single-group pre–post study design was used to evaluate the feasibility, acceptability and cost efficiency of a webinar as the first-line advice for people with IBS in primary care. The webinar directly reflected first-line IBS advice from the 2016 British Dietetic Association evidence-based practice guidelines for the dietary management of IBS in adults⁽¹³⁾. Data were collected between 26 March 2018 and 15 April 2020. The project is registered as a service evaluation with Somerset Partnership NHS Foundation Trust and data were collected anonymously; therefore, further ethical approval was not required.

Healthcare professionals (HCPs) working locally referred adult patients (aged of 18 years and over) with IBS to a newly developed 'IBS First Line Advice' webinar hosted on the NHS Community Dietetic website. Carers or friends were directed to the website, if appropriate, to support the patient. Before and after completion of the webinar individuals were given the option to complete an anonymous survey.

Developing the webinar

A webinar subscription was acquired with GOTOWEBINAR Pro Version (LogMeIn, Inc., Boston, MA, USA) and the webinar platform was approved for use by Somerset Partnership NHS Foundation Trust Information Governance. An unbranded webinar was recorded using a POWERPOINT (Microsoft Corp., Redmond, Washington, USA) presentation delivered by three specialist gastroenterology community dietitians (MW, CM and LS). The recording was edited and uploaded to the YouTube 'Patient Webinars' channel (<http://www.youtube.com>). The YouTube link was then embedded into the community dietetic department website, www.patientwebinars.co.uk. With access to 4G or wi-fi, the webinars were then available 'on-demand' to any patient via smart phone, laptop, tablet or computer at a time and place of their choosing. Patients could also download patient education resources directly from the website; for example, NICE accredited dietary advice, constipation advice, information on additional dietary approaches, etc.

The cost of creating the webinar was £3597, including the webinar subscription (£2363/year), microphone (£120 one-off cost), business card cost (£280 one-off cost) and staff costs (£834). An illustration of the staff time and process used to create the webinar is provided in the Supporting information (Data S1).

Local GPs and other HCPs were given the website address and asked to direct adult patients to the website if the patient needed first-line IBS advice. No referral letter was necessary from the referring clinician. To ensure that HCPs were aware of the webinar, e-mails with the website address were sent monthly to all Somerset senior GPs, practice managers, pharmacists and health visitors. Business cards were created for HCPs to give to patients with the website address and these were distributed to secondary care gastroenterology departments, endoscopy nurses, pharmacists, acute dietitians and GPs locally. Talks were given at county-wide GP education days highlighting the webinar and the website.

Data collection

Both pre- and post-IBS webinar surveys were developed using QUESTBACK (Questback, Bridgeport, CT, USA) and anonymous unpaired data was collected between 26 March 2018 and 15 April 2020.

Basic demographic data were collected, including age, gender, location within the UK, who gave the webinar details to the patient, whether IBS had been diagnosed by an HCP, whether the patient was registered with a Somerset GP, and whether the webinar was being accessed by a patient, carer, friend or HCP. HCPs and carers were

noted and then automatically directed out of the survey and were not included in the survey outcome data.

The surveys focused on collecting data on accessibility, acceptability, knowledge, confidence and examined use of healthcare services. Survey questions allowed for only one answer per question, with the exception of questions 8 and 14 where multiple answers were allowed. The survey questions are provided in the Supporting information (Data S2).

Patients were also asked what other information, if any, they would like to see included in the webinar and responses were categorised using a simple content analysis.

Data were also collected for referral rates to the dietetic-led gastroenterology service for one-to-one appointments for the year prior and year after the launch of the webinar. The estimated value of dietetic time in clinic was calculated using figures for an NHS band 6 dietitian for 2017 to 2019 including on-costs (approximately £23.18 per hour).

Data were analysed using SPSS, version 25 (IBM Corp., Armonk, NY, USA) and are presented as frequencies. Comparisons between pre- and post-surveys compare proportions in two unequal samples using a MEDCALC comparisons of proportions calculator (<https://www.medcalc.org>).

Results

The IBS webinar was viewed 2300 times between 1st September 2017 and 15th April 2020. In total, 1171 attendees accessed the pre-webinar survey and 443 (38%) engaged with the post-webinar survey. There is no record

of the number of patients who were offered the webinar but did not access it. The majority of patients had been diagnosed with IBS by a HCP (68%) and, of those that completed the post-webinar survey, most were registered with a Somerset GP (84%). Respondents were principally female (75%). Details on age, location of the patient, referral source and whether the attendee was a patient, carer or HCP are provided in the Supporting information (Data S3).

Figure 1a highlights the patient acceptability of using the webinar. The majority of patients found the webinar easy to join, were satisfied with the overall content and would recommend the webinar to friends with IBS. Figure 1b shows the reasons for attending the webinar were varied, although the most frequently cited were access to accurate and reliable information, the ability to re-watch the webinar, and no requirement to travel or take time off work.

The change in patient confidence and knowledge in managing their IBS symptoms with diet is shown in Fig. 2. These data show that patient confidence and knowledge increased after the webinar. The categories were dichotomised (very, fairly and some level of confidence = confident; neither, not and not at all confident = not confident; excellent, good, fair knowledge = good; limited, poor, no knowledge = poor). Of the attendees, 45% ($n = 1171$) were not confident to manage their IBS pre-webinar and this decreased to 16% ($n = 375$) post-webinar [difference = 29%; 95% confidence interval (CI) = 24–34%; $P < 0.0001$]. Furthermore, 44% ($n = 1171$) reported poor knowledge pre-webinar and this decreased to 5% ($n = 443$) post-webinar (difference = 39%; 95% CI = 35–43%; $P < 0.0001$).

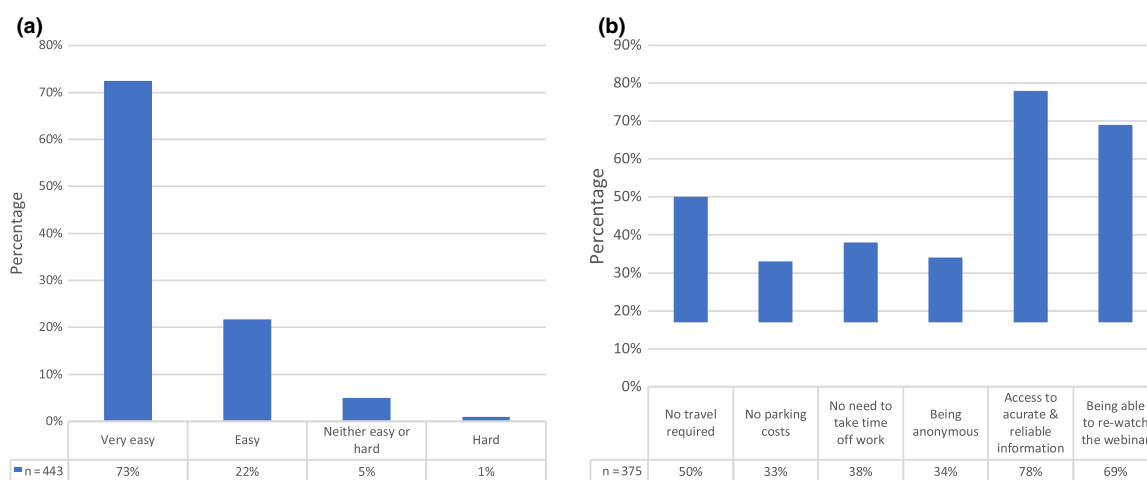


Figure 1 (a) Patient feedback on how easy it was to join the webinar ($n = 443$). (b) Patient feedback on which factors were important to them when choosing to attend the webinar ($n = 375$). In figure (b), patients could choose more than one answer.

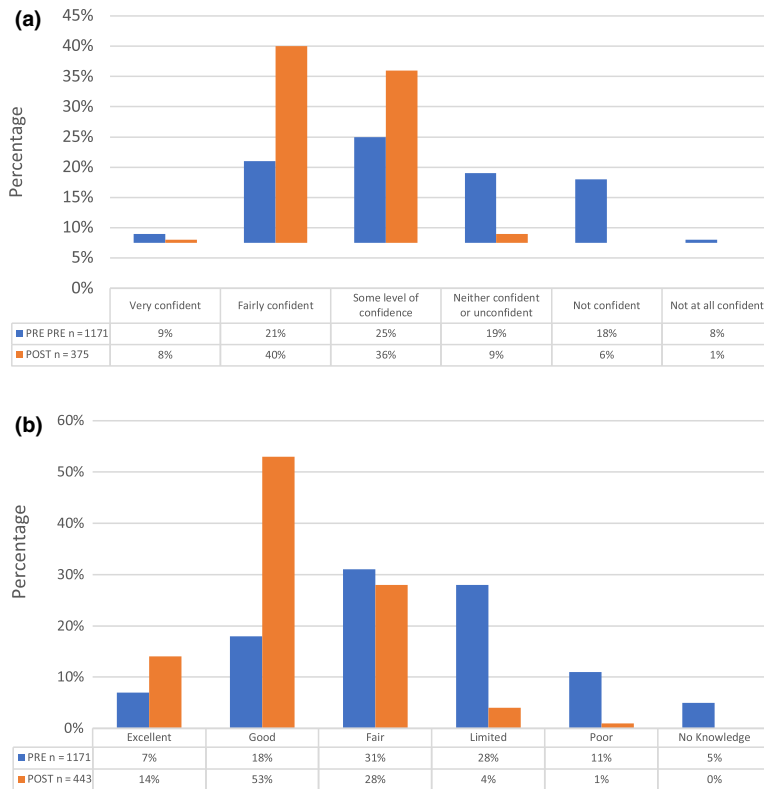


Figure 2 (a) Patient feedback comparing answers before and after watching the webinar how confident they were in managing their irritable bowel syndrome (IBS) symptoms (pre $n = 1171$ and post $n = 375$). (b) Patient feedback comparing answers before and after watching the webinar on how they would rate their knowledge on managing their IBS symptoms through diet (pre $n = 1171$ and post $n = 443$).

Figure 3 shows the results of questions testing specific knowledge, which indicate whether patients listened, assimilated and understood information in the webinar. Of the attendees, 25% ($n = 1171$) participants pre-webinar correctly identified allergy testing was ineffective but 70% ($n = 375$) post-webinar could answer this question correctly (difference = 45%; 95% CI = 39–50%; $P < 0.0001$). Low lactose diet was identified correctly as effective by 35% ($n = 1170$) pre- and 78% ($n = 375$) post (difference = 43%; 95% CI = 38–48%; $P < 0.0001$); low FODMAP (fermentable oligo-, di-, mono-saccharides and polyols) diet 71% pre 65% post (difference = 5%; 95% CI = 0.04–11%; $P < 0.05$); low fructan diet 24% pre 82% post (difference = 58%; 95% CI = 53–62%; $P < 0.0001$).

Figure 4 shows how attendees adjusted their understanding of which HCP would be most useful to seek advice from for IBS. Reliance on GPs and secondary care gastroenterology reduced, whereas the understanding that a specialist dietitian was the most appropriate professional increased. Assuming ‘specialist dietitian’ is the correct answer; 62% ($n = 1171$) were correct pre-webinar and 86% ($n = 375$) post-webinar (difference = 24%; 95% CI = 19–28%; $P < 0.0001$).

Patients were also asked if they would like to attend a webinar specifically on the low FODMAP diet; 64% of patients confirmed they would and a further 27% answered ‘maybe’.

A simple content analysis of feedback from 249 patients showed that the most frequent group of comments related to positive satisfaction with the webinar, $n = 31$; comments referencing the low FODMAP diet $n = 29$; patients requesting further information on the low FODMAP diet $n = 14$. Answers from patients are provided in the Supporting information (Data S4).

In the year before the webinars were available (September 2016 to August 2017), the dietetic-led gastroenterology service received 350 referrals. In the year after the availability of the webinar (September 2017 to August 2018), 195 referrals were received into this service, showing a 44% drop in referral numbers. The value of the dietetic time saved by this project is estimated at £3593 per annum. The time saved as a result of the reduced referral rate has allowed the provision of a service for patients with coeliac disease and inflammatory bowel disease in remission, which were both previously unmet needs.

Discussion

This service evaluation showed that the delivery of a webinar as the first form of patient education to those diagnosed with IBS in primary care was feasible, acceptable and cost effective. The webinar was feasible to develop and incorporate into a clinical dietetic service with very modest set-up costs. It was acceptable to

Figure 3 (a) Patient feedback comparing answers before and after watching the webinar on whether they would find it useful to have access to allergy testing to find a solution for their irritable bowel syndrome (IBS) symptoms (pre $n = 1171$ and post $n = 375$). (b) Patient feedback comparing answers before and after watching the webinar on which diets are most likely to help them in managing their IBS symptoms (pre $n = 1170$ and post $n = 375$). In Figure (b), patients could choose more than one answer. *indicates the correct answer.

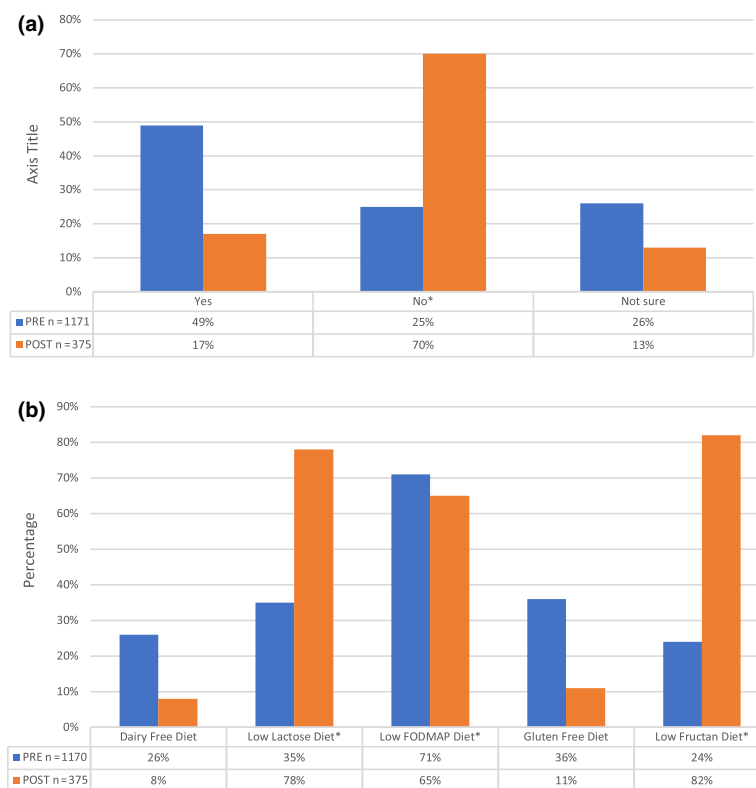
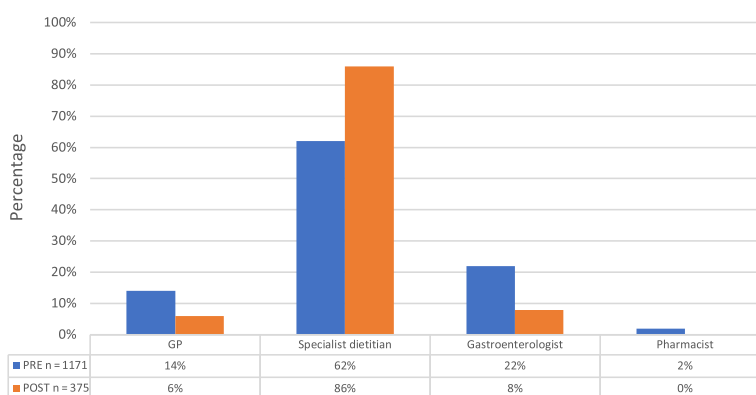


Figure 4 Patient feedback comparing answers before and after watching the webinar on which healthcare professional would be most useful to seek advice from for their irritable bowel syndrome symptoms (pre $n = 1171$ and post $n = 375$). (GP, general practitioner.)



patients in a number of ways and data indicated that patient knowledge improved. The cost of development and delivery of the webinar were more than off-set by time savings, which were sufficiently significant to allow the expansion of the service to other patient groups.

The growth of Internet use is changing the landscape of global health care and health seeking behaviour; 60% of people surveyed acknowledged that online advice would influence their healthcare decisions⁽¹⁴⁾. One in three adults in the USA use the Internet to diagnose or learn about a health concern⁽¹⁵⁾, and over 83% of Europeans look online for health information^(16,17). UK

research indicates that patients are increasingly happy to embrace new technology, such as video consultations with their GP^(14,18). Webinars are a simple and effective digital innovation potentially allowing populations unprecedented immediate access to health advice. It is acknowledged that trust and confidence in online information remain important⁽¹⁹⁻²¹⁾ and these webinars give patients convenient remote access to the most up-to-date guidelines and evidence-based advice directly from specialists working in the field. The most common reason for attending the webinars was 'access to accurate and reliable information' reflecting the patients' trust in the

information provided. This corresponds to international research underlining the desire for easy access to trustworthy health care on the internet^(15,20,21). This need for trustworthy information also highlights the importance of specialist HCPs developing the content and delivering the patient-focused webinars.

During the evaluation period, over 2300 people viewed the webinar, indicating that it was a feasible form of patient education. Furthermore the vast majority of patients found the webinar easy to use and would recommend it. Recent research suggests that age is not a barrier to technology use⁽¹¹⁾ and this is reflected in our results, with all ages between 18 and 74 years being well represented and 33% of the sample being aged 55–74 years (see Supporting information, Data S3) Research shows that IBS is a more common disease in women with an odds ratio of 1.67. Our data showed a 75% female dominance, which is higher than expected and may reflect a male reluctance to engage in online education and/or a female response bias to completing questionnaires^(3,22)

The on-demand webinar could be accessed as often as they wished at any time of day, making this an easy and convenient way to encourage patient self-management and consolidate knowledge, allowing patients to take the time they required to make sense of the complex medical and dietary information⁽²³⁾. This approach may be particularly useful in chronic health conditions^(11,23) such as IBS, and may explain why the ability to re-watch the webinar was the second most popular reason for accessing this form of patient education. Our data demonstrates that attendees not only self-reported an improvement in their knowledge after accessing the webinar, but also showed an increase in the proportion of correctly answered test questions post-webinar, suggesting that the attendees had listened, assimilated and understood the information. Research shows that virtual education may be as effective or more effective than a routine physician appointment. It may be that the opportunity to re-watch the webinar and consolidate knowledge in part explains this finding⁽¹⁰⁾. The increase in knowledge is also likely to be associated with the improvements seen in self-reported confidence.

Our data showed clearly that preventing the need to travel and preventing the need to take time off work were important to patients who accessed the webinars. Travelling to appointments may pose a significant problem in both rural and urban areas to those who have limited mobility, insufficient funds, lack of access to transport, lack of child or respite care cover or other time constraints. For these patients on-demand, webinars could significantly improve access to health education, allowing them to choose when and where they attend⁽¹⁸⁾.

The overwhelming majority of patients were satisfied with the content of the webinar and most would recommend it to friends, indicating that patients found the webinar acceptable. Additional comments on the survey consistently suggested that webinar content was comprehensive and extensive (see Supporting information, Data S4). Requests for further information were focused predominantly on second-line dietary advice, specifically the low FODMAP diet. Based on this feedback, we created a low FODMAP diet webinar (available at <https://patientwebinars.co.uk>), which has had 6000 views in the first 12 months, suggesting that the feedback from our sample reflected a need in the general IBS population.

The symptoms of IBS (e.g. abdominal pain, bloating, stool changes) can be very similar to those of bowel or ovarian cancer and inflammatory bowel disease, and are likely to explain why 4% of those identified with IBS are later diagnosed with a serious organic disorder⁽²⁴⁾. Hence, any symptoms suggestive of more serious pathology (also known as 'red flags'), such as blood in stools, unintended weight loss and unexplained low iron levels, should be investigated further. For this reason, the webinar clearly informs patients of these 'red flags', to ensure patient safety by encouraging earlier care (Fig. 5). Feedback indicated that patients did understand the safety issues, as illustrated by this quote '*I need to see my GP as I have some of what you call red flags*'.

Recent systematic reviews from Australia and Canada have found that virtual education can lead to a more efficient use of clinical time offering a direct alternative to seeing an HCP face-to-face^(10,11), a finding that is supported by our data showing a 44% reduction in face-to-face referrals into the dietetic-led gastroenterology service in the first year after the start of the webinars. This significant release in clinical time has allowed the dietetic team to assess unmet needs, leading to new regional care pathways for both coeliac disease and inflammatory bowel disease in remission. Additionally, from a cost-saving perspective, this cohort of patients did not require administration of appointments and could download resources directly from the website on to their own device, leading to further savings from printing and postage costs. NHS estates costs for room hire, staff and patient travel costs, parking, and patient time should also be considered in any long-term financial savings assessments.

Other data from evaluation of face-to-face IBS group sessions shows that patients are frequently uncomfortable discussing bowel related symptoms in a group environment (Williams M, Marchant C, unpublished data). The webinar allows anonymity, a factor identified as a reason for attending the webinar. This factor may explain the stark contrast between numbers of patients engaging in the different forms of patient education: only 48 patients

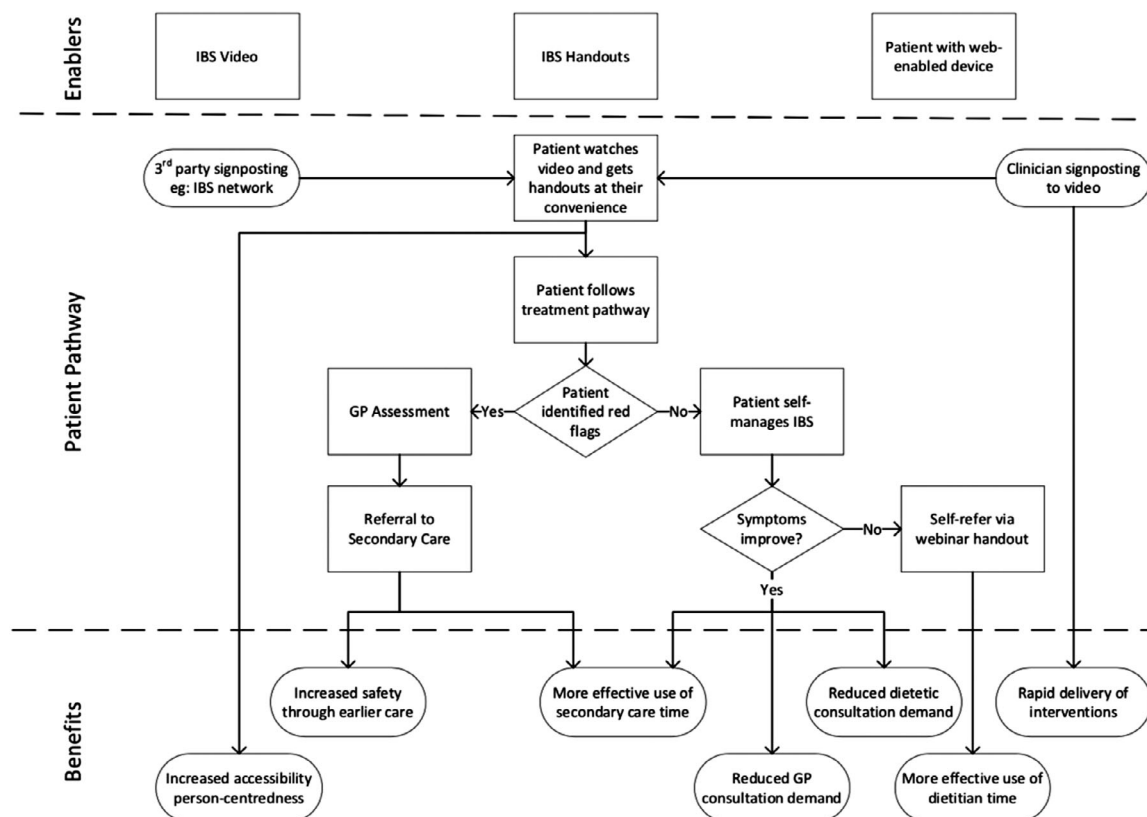


Figure 5 The potential benefits to the healthcare system of using webinars for first-line irritable bowel syndrome (IBS) patient education. (GP, general practitioner.)

attending monthly in-person group sessions over a 20-month period utilising only 22% of possible capacity⁽⁷⁾.

The unbranded IBS webinar is now also available (<https://www.nhs.uk/conditions/irritable-bowel-syndrome-ibs/ibs-diet-video-guide>) and has had over 32 000 views between April 2019 and April 2020. Access on this national NHS website is further enabling other UK departments to use the webinar free of charge. This prevents the need for replication of identical webinars by different clinical commissioning groups and, importantly, allows departments to benefit from financial savings without the need for developmental costs. The 44% drop in referral rates led to a £3.6K staff cost saving in our small service. However, the real difference will come when the concept of webinars is scaled up and rolled out nationally to other larger areas of need; for example, musculoskeletal back pain, diabetes, cardiovascular disease or post-cancer care, particularly allowing for a reduction in follow-up reviews after hospital procedures and ongoing specialist input for long-term health conditions⁽⁸⁾. The 2019 NHS Long Term Plan aims to remove a third of face-to-face hospital outpatient appointments, equivalent to 30 million outpatient visits per year, freeing up significant clinical time and allowing

outpatient teams to work differently⁽⁸⁾. A reduction in referrals through the use of webinars could significantly contribute to this release in clinical time (Fig. 5), while money saved could lead to effective reallocation of clinical funding at a national level. It would be logical for NHS UK to act as a site for a national repository of webinars in the long term, although this requires further discussion.

The webinar specifically sought to educate patients on who to consult for IBS advice, and the results showed that patients felt that a specialist dietitian was the most appropriate HCP to deliver dietary advice for IBS. This is an important finding because it is well known that the high costs of treating IBS are associated with inappropriate reliance on GPs and secondary care⁽²⁵⁻²⁸⁾. One in twelve GP consultations are for gastrointestinal problems and IBS is by far the most common gastrointestinal condition seen by GPs⁽²⁹⁾. Therefore, the demand on GP time can be addressed by dietitian-led treatment including the use of webinars to manage the IBS workload in primary care. Evidence already highlights the ability of dietitians to work autonomously and effectively with IBS patients in a one-to-one setting in primary care, assessing patients without medical correspondence, as well as

recommending appropriate treatment and/or onward referral⁽³⁰⁾. The webinars are a further development of this role, providing patients with faster access to the right care at the same time as encouraging patient self management and reducing the need for expensive referrals to secondary care. Care of IBS is an example of where dietitians could take on roles as first contact practitioners (FCPs) in the frontline of general practice in order to reduce GP workload.

The data collected for this feasibility study has some limitations. The anonymity of the online data collection made it impossible to cross-match responses pre- and post-webinar; we do not know which post-responses match which pre-responses. The data collection also does not allow for long-term follow up of patients to determine whether watching the webinar led to improvements in symptoms; this should form the basis for future research. Only 38% of those completing the pre-survey completed the post-survey and the data collection did not allow assessment of the numbers of people who opted out of the surveys or who declined to engage with the webinar. This may mean there are inherent biases related to the type of person who was willing to complete both surveys.

From an equity accessibility perspective, it would be important to look at ways of making these webinars available to all patient groups, including in other languages, as well as for those with hearing and/or sight disability. Discussions are already ongoing with the Deafness Support Network and NHS UK.

Conclusions

Patient webinars for first-line advice for IBS are an innovative and novel use of digital technology offering those with IBS unprecedented access to patient education. At very little cost to the health service, patients can increase their knowledge and confidence with trustworthy dietitian-led advice, at the same time as providing a simple cost-effective solution to help release time across the healthcare system. As virtual communication becomes ubiquitous within society, the use of this form of patient education is likely to become mainstream, enabling patient's needs to be addressed as early as possible and empowering patients to better self-manage and understand their condition, potentially leading to improved clinical outcomes. More research is urgently needed to better assess the benefits, feasibility and challenges of implementing this technology at scale.

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Conflict of interests, source of funding and authorship

The authors have no conflicts of interest.

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MW designed the study. MW and CM devised the patient surveys. MW and MH processed the outcome data and performed the analysis. MW designed the figures. MW wrote the manuscript in consultation with MH. Critical feedback and contribution to the final version of the manuscript was given by YB, LH, CM, LS and MH. All authors have approved the final version of the paper submitted for publication.

Transparency declaration

The lead author affirms that this manuscript is an honest, accurate and transparent account of the study being reported. As described in the materials and methods, the present study was defined as a service evaluation and was approved by Somerset Partnership NHS Foundation Trust (approval code S562). As a service evaluation, there are no specific reporting guidelines available. The lead author affirms that no important aspects of the study have been omitted and that any discrepancies from the study have been explained.

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Supporting information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Data S1. The diagram indicates the process flow and clinical time used to create webinars for patients with irritable bowel syndrome.

Data S2. Survey questions.

Data S3. Patient demographics, who directed the patient to the webinar and who attended the webinar.

Data S4. Qualitative data was collected using the question, 'What other information would you like to see included in the webinar?'