Smartphone app based consultations using IBDsmart and IBDoc® reduce the need for face-to-face consultations without impairing the quality of life of inflammatory bowel disease patients

Authors: McCombie A1, Walmsley R2, Barclay M1, Viaseo N3, Ho C3, Brown S3, Rosser R2, Inns S1, Gray A1, Regenbrecht H1, Langloitz T1, and Schultz M1,4.

Affiliations: 1University of Otago; 2Waitemata District Health Board; 3Canterbury District Health Board; 4Southern District Health Board; 5Hutt Valley District Health Board

Granting bodies: New Zealand Society of Gastroenterology Janssen Research Fellowship 2015, Healthcare of Otago Charitable Trust, AbbVie unrestricted Research Grant, the GutHealthNetwork

Introduction:
- Using smartphones to communicate symptoms and biomarkers is a potentially cost-effective and quality-of-care equivalent method for managing inflammatory bowel disease (IBD).
- We aimed to compare the management of IBD using two smartphone apps (IBDsmart for symptom monitoring and IBDoc® for faecal calprotectin [FC] monitoring) versus standard face-to-face (F2F) care.
- We hypothesised non-inferiority of quality of life (QoL) and symptoms coupled with a reduction in standard F2F appointments in the smartphone app group.

Methods:
- IBD outpatients (seen more often than annually) were randomized to smartphone app or standard F2F care over 12 months.
- Those in the smartphone app group sent their self-reported activity index scores (Harvey Bradshaw Index [HBI] for Crohn’s disease patients and Simple Clinical Colitis Activity Index [SCCAI] for ulcerative colitis patients) and FC scores every three months during the study period and were not seen F2F unless they flared or specifically requested one; those in F2F care were seen as usual during the study period (i.e. three or six monthly).
- QoL was measured in both groups via the IBD questionnaire (IBDQ) at 0, 3, 6, 9, and 12 months.
- The study was conducted with the consent of the New Zealand Health and Disability Ethics Committee (15/NTA/44). Each participant provided informed consent and only de-identified data are presented. The study was registered with the Australian New Zealand Clinical Trials Registry (ACTRN12615000342516).

Results:
- 100 people (73 Crohn’s disease, 49 Male, average age 35yr) consented and completed baseline questionnaires (Figure 1).
- There were no differences between the two groups in terms of IBDQ (Figure 2), HBI (Figure 3), and SCCAI (Figure 4).
- Outpatient appointment numbers were 1.7 (std dev= 0.8) in standard F2F care versus 0.6 (std dev= 0.9) in smartphone app care (p < 0.001).
- There was no difference in number of surgical outpatient appointments and number of IBD related hospitalizations between groups.

Conclusion:
- Remote symptom and FC monitoring is an effective way of managing patients and reduces the need for F2F outpatient appointments.
- The telemedicine program was much simpler than the one used by the Dutch program called myIBDcoach which had similar findings.1 Hence, it may be that simpler telemedicine programs are non-inferior to more complicated telemedicine programs, although this question was not directly addressed in the present study.

Acknowledgements
- BÜHLMANN Laboratories AG provided the kits for IBDoc® free of charge.
- CodeFlügel GmbH made IBDsmart.
- The following gastroenterologists recruited for the study but are not on the author list: Dr Richard Stein, Dr Steven Burmeister, Dr Ratna Pandey, Dr Paul Frankish, Dr Michael Burt, Dr James Falvey, Professor Richard Gearry, Dr Teresa Chalmers-Watson, and Dr Ralf Lubcke.

Reference

Figure 1: Randomization and participation

Figure 2: IBDQ (measure of QoL) for smartphone app versus F2F care

Figure 3: HBI (measure of Crohn’s disease symptoms) for smartphone app versus F2F care

Figure 4: SCCAI (measure of ulcerative colitis symptoms) for smartphone app versus F2F care