Supporting patients at home after colorectal surgery through a mobile app: A feasibility study

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OBJECTIVE

To assess feasibility of a mobile app for remote support and monitoring of patients after discharge home following colorectal surgery

Mobile app features daily patient questionnaire, tailored recommendations, education

- Mobile app used over first 14 days after discharge
- Patients submitted daily symptom survey → received tailored feedback and education
- 2 Physician Assistants (PA) reviewed app entries daily
- 'Red flag' patient entries prompted call from PA or warning to patient to visit Emergency Room (ER)

OUTCOMES

- **Feasibility outcomes**
 - App usage by patients
 - Time spent by PAs monitoring app
 - Patient satisfaction with app
- **Exploratory outcomes**
 - ER visits within 30 days
 - ER visits avoided
 - 30-day readmissions to hospital
 - Complications

Demographic and clinical characteristics of study sample (n= 81)

Variable	n (%)
Age	43 (33-55)
Female	36 (44.4)
Diagnosis	
Neoplasm/malignancy	19 (23.5)
Inflammatory bowel disease	51 (63.0)
Other	11 (13.6)
Surgical approach	
Laparoscopic	38 (46.9)
Open	43 (53.1)
Operation performed	
Partial/total colectomy	33 (40.7)
Low anterior resection	8 (9.9)
Abdominoperineal resection	3 (3.7)
Ileal pouch anal anastomosis	10 (12.3)
Other	27 (33.3)
Length of stay in days*	6 (4-8)
Stoma (ileostomy/colostomy)	38 (46.9)

* Expressed as median (range)

RESULTS

- Nov. 2016 to Apr. 2017, enrolled 106 patients who underwent colorectal surgery at Mount Sinai Hospital (Toronto, Ontario)
- 92 patients (86.8%) logged in and used app at least once
- 81 patients with complete data and usage within first 14 days included in analysis

Mobile app usage and recommendations to patients

App usage and advice*	Mean (SD, range)
App entries	7.2 (4.4, 1 – 14)
Call backs	2.0 (1.9, 0 – 9)
Warnings to visit ER	0.2 (0.6, 0 – 4)
PA time (hours) monitoring app, per week	1.6

* Per patient, unless otherwise stated

Mobile app usage in the first 14 days at home

Patient satisfaction with mobile app:

- Surveys completed by 30.0% participants
- 100% reported overall experience as **good or excellent**
- 95.8% reported app helped them feel **more confident in self-management at home**

Emergency room visits, readmissions, complications (n=81)

Outcome	n (%)
ER visits	15 (18.5)
ER visits avoided	3 (3.7)
Readmissions	5 (6.2)
Complications	
None	47 (58.0)
Ileus	1 (1.2)
Surgical site infection	18 (22.2)
Dehydration	6 (7.4)
Anastomotic leak	1 (1.2)
Obstruction	2 (2.5)

CONCLUSION

- A mobile app for patients post-colorectal surgery = feasible discharge intervention; viewed positively by patients
- Findings will inform future larger scale randomized studies to assess the effect of the mobile app on ER visits and readmissions among colorectal surgery patients.