Impact of enhanced instructions by short message service on the quality of bowel preparation for colonoscopy

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To the Editor,

Colorectal cancer (CRC) is the world's fourth most deadly cancer (1). The incidence of CRC is increasing in China (2). Colonoscopy is the primary screening tool for CRC precancerous lesions (3). Adequate bowel preparation is crucial for successful colonoscopy, and mainly associated with patients' age, body mass index (BMI), and compliance (4). The aim of this study was to explore the impact of enhanced instructions by short message service (SMS) on the quality of bowel preparation for colonoscopy.

This retrospective observational study followed the Declaration of Helsinki and obtained the ethical approved of the Medical Ethical Committee of the General Hospital of Northern Theater Command (No. Y (2021)091). We retrospectively reviewed the medical records of 475 patients who underwent colonoscopy by an endoscopist (XQ) at our department between January 2021 and July 2021. The exclusion criteria were as follows: 1) inpatients who underwent colonoscopy; 2) patients with a history of colorectal resection; 3) patients who did not complete colonoscopy due to severe intestinal obstruction or stenosis and unbearable pain; and 4) major clinical data were lacking.

After signing the informed consents for colonoscopy, the mobile phone numbers of patients or their relatives were recorded and confirmed by an investigator (CG) to ensure that all patients can receive text messages. In non-SMS group, patients were guided by regular instructions, mainly including face-to-face communication regarding bowel preparation. At the primary investigator's discretion, some patients also received enhanced instructions via SMS before the day of colonoscopy to further highlight the importance of adequate bowel preparation.

Generally, all patients receive 3L polyethylene glycol (PEG) for bowel preparation. General rule at our department is as follows: patients are often instructed to drink 1L PEG at 21:00 on the day before the colonoscopy, and then to take the remaining 2L PEG at 4:00 and 30ml simethicone at 6:00 on the day of the colonoscopy.

We collected the information regarding demographic data, reasons for colonoscopy, history of abdominal surgery and colonoscopy, and colonoscopy performed in the morning. In addition, total and per colon segment of Boston bowel preparation scale (BBPS) score (5), polyp and/or adenoma detection rate (PDR/ADR), and cecal intubation time were reviewed.

Overall, 296 patients were included, of whom 70 and 226 were in SMS and non-SMS groups, respectively. Only BMI was significantly different between the two groups (Table 1). Compared to non-SMS group, SMS group had significantly higher total BBPS score (7.53 vs. 7.04, P=0.008) and BBPS scores for left (2.64 vs. 2.47, P=0.022) and right colon segments (2.30 vs. 2.10, P=0.013), but not BBPS score for transverse colon segment (2.59 vs. 2.46, P=0.173), rates of adequate bowel preparation (P=0.307) and cecal intubation time >10min (P=0.462), cecal intubation time (P=0.367), or PDR/ADR (P=0.266) (Table 1).

In conclusion, SMS enhanced instructions may improve the quality of bowel preparation. A randomized controlled study is being prepared at our department and will be performed to further confirm the reliability of the conclusion.

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X.Q. involved in conceptualization. H.C., and C.G. involved in methodology. X.Q. and F.G. involved in validation. C.G., H.C., and X.Q. involved in formal analysis, investigation, data curation, and writing original draft. C.G., H.C., R.C, X.Q., and F.G. involved in writing review and editing and visualization. X.Q. and F.G. involved in supervision and project administration. All authors have made an intellectual contribution to the manuscript and approved the submission.

Availability of data and material

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Table 1. — **Comparison between SMS and non-SMS groups**

Variables	SMS (N=70)	Non-SMS (N=226)	P-value
	Mean±SD or Median (Range) or Frequency (Percentage)	Mean±SD or Median (Range) or Frequency (Percentage)	
Age (years)	48.51±15.43 50 (21-83)	50.71±15.33 53 (18-81)	0.264
Male	37 (52.9%)	115 (50.9%)	0.786
BMI (kg/m²)	23.26±3.12 23.0 (17.0-32.9)	24.54±3.99 24.5 (14.7-36.7)	***0.015***
-Height (m)	1.67±0.08 1.69 (1.50-1.83)	1.67±0.08 1.68 (1.49-1.87)	0.987
-Weight (kg)	65.30±11.33 65.0 (39.0-95.0)	68.84±14.00 67.5 (37.5-115.0)	0.113
Reasons for colonoscopy			
Diarrhea	17 (24.3%)	44 (19.5%)	0.400
Abdominal pain/discomfort	31 (44.3%)	76 (33.6%)	0.118
Constipation	9 (12.9%)	31 (13.7%)	1.000
Altered bowel habit	21 (30.0%)	53 (23.5%)	0.273
Abdominal distension	4 (5.7%)	20 (8.8%)	0.616
Others	17 (24.7%)	71 (34.1%)	0.296
History of abdominal surgery	18 (25.7%)	49 (21.7%)	0.514
History of colonoscopy	27 (38.6%)	96 (42.5%)	0.582
Colonoscopy performed in the morning	44 (62.9%)	139 (61.5%)	0.889
Total BBPS score	7.53±1.27 8 (4-9)	7.04±1.45 7 (1-9)	***0.008***
BBPS score for colon segments			
-Left colon segment	2.64±0.54 3 (1-3)	2.47±0.58 3 (1-3)	***0.022***
-Transverse colon segment	2.59±0.50 3 (2-3)	2.46±0.59 3 (0-3)	0.173
-Right colon segment	2.30±0.57 2 (1-3)	2.10±0.84 2 (0-3)	***0.013***
Adequate bowel preparation (Total BBPS score≥6 and BBPS score for per colon segment≥2)	67 (95.7%)	206 (91.2%)	0.307
PDR/ADR	37 (52.9%)	138 (61.1%)	0.266
Cecal intubation time	8.58±5.18 7.08 (2.45-35.02)	9.14±5.06 7.66 (2.40-30.20)	0.367
Cecal intubation time>10min	19 (27.1%)	74 (32.9%)	0.462

SMS, short message service; BMI, body mass index; BBPS, Boston bowel preparation scale; PDR/ADR, polyp and/or adenoma detection rate.

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