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Systematic review

Impact of medical secretarial and administrative support on workflow efficiency and patient outcomes in endoscopy services: a systematic review

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Abstract

Background: Endoscopy services depend on accurate scheduling, timely communication, reliable documentation, and patient preparation. Administrative failures disrupt these processes and leave diagnostic pathways incomplete. This review examines the relationship between secretarial and administrative support, service efficiency, and patient outcomes. Method: A qualitative synthesis summarized ten original intervention studies published before 31 May 2026. Interventions comprised centralized scheduling, documentation assistance, workflow redesign, human navigation, and automated reminders. Findings were grouped by intervention mechanism, with clinical outcomes distinguished from operational measures and screening completion. Result: Centralized scheduling reduced telephone answering time from over 100 seconds to 38 seconds. Scribing reduced documentation time. Navigation improved colonoscopy completion in several randomized trials, including increases from 53.2% to 61.1% and from 42.1% to 55.1%. A smaller navigation trial reported an uncertain incremental benefit. Text reminders reduced nonattendance in two trials, whereas another trial found no improvement in attendance with satisfactory preparation. Preparation benefits were inconsistent, and clinical benefits were not established by these intervention studies. Conclusion: Administrative support has its strongest demonstrated effects on workflow and access to completed colonoscopy. Data about medical secretaries specifically is limited because most interventions involved broader teams or digital systems.

Keywords: Endoscopy; medical secretarial support; administrative support; workflow efficiency; patient navigation.

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Introduction

Gastrointestinal diseases generate healthcare utilization, and endoscopy represents an important component of diagnostic and preventive service delivery (1). Endoscopy capacity depends on preparation, room availability, recovery arrangements, and the time allocated to each procedure, alongside the procedure itself. A time-and-motion investigation identified scheduling templates and nonprocedural activities as prominent sources of inefficiency, establishing an operational rationale for examining administrative support (2).

Nonattendance reflects patient circumstances and failures within service organization. Gurudu and colleagues identified facility-related explanations, including scheduling errors, for 44.3% of missed appointments in their open-access endoscopy cohort. This finding links administrative accuracy to resource utilization and demonstrates why appointment management warrants evaluation as a substantive service function. Administrative accuracy therefore merits explicit attention within routine endoscopy quality improvement. Facility-generated nonattendance also means that patient reminders alone address only part of the operational problem encountered in endoscopy services (3).

The consequences of incomplete coordination lead to unused appointments to unfinished diagnostic assessment after abnormal screening results. Across 39 United States healthcare organizations, only 56.1% of patients completed follow-up colonoscopy within 360 days after a positive stool-based screening test. Differences across patient

groups and organizations indicate that access depends on the interaction between individual circumstances and the systems responsible for arranging follow-up. These observations support attention to referral tracking, communication, and the distinction between scheduling a procedure and completing it (4).

Timeliness carries clinical significance because prolonged diagnostic intervals are associated with less favorable colorectal cancer findings. Corley and colleagues found increased cancer and advanced-stage disease risks with colonoscopy delays of ten months or longer after a positive fecal immunochemical test (5). In an Italian screening cohort, failure to complete colonoscopy after a positive test was associated with approximately twice the risk of colorectal cancer death (6). These observational associations establish the importance of diagnostic completion without demonstrating that any particular administrative intervention reduces mortality (5,6).

Preparation quality provides another connection between service organization and effective endoscopic assessment. Lebwohl and colleagues documented substantial adenoma miss rates following examinations with suboptimal preparation, highlighting the clinical importance of completing preparation successfully. These findings justify examining administrative support in the pathway from referral receipt to attendance, documentation, and follow-up (2–7). The present review addresses workflow efficiency and patient outcomes while distinguishing direct secretarial functions from broader navigation or organizational interventions, a distinction necessary when translating evidence about service processes into decisions concerning staff roles.

Methods

This systematic review was structured according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 framework (Fig 1). The review examined administrative and medical secretarial support in adult gastrointestinal endoscopy services. Eligible interventions included appointment scheduling, referral tracking, documentation assistance, reminders, and patient navigation with identifiable administrative components. Comparators comprised usual care, alternative support arrangements, or preintervention practice.

Two authors searched PubMed, Scopus, Web of Science Core Collection, and the Cochrane Central Register of Controlled Trials for articles published from database inception through 31 May 2026. Search strategies combined controlled vocabulary and free-text terms relating to “endoscopy,” “colonoscopy,” “medical secretary,” “administrative support,” “scheduling,” “patient navigation,” “appointment reminders,” “scribes,” and “workflow.” Boolean operators and database-specific syntax were applied to combine relevant concepts. Reference lists and forward citations of eligible publications were examined to identify additional studies.

After duplicate removal, two authors independently screened titles and abstracts against predefined eligibility criteria. Full texts of relevant publications were assessed independently by the same authors. Disagreements were resolved through discussion and consensus. Randomized trials and comparative observational studies evaluating administrative interventions were eligible for the effectiveness synthesis. Descriptive studies and economic

analyses provided contextual evidence. Studies limited to procedural devices, bowel-preparation products, or clinical interventions without an identifiable administrative component were excluded. Multiple reports from the same study were linked to prevent duplicate counting.

Two authors extracted data independently using a standardized collection form. Extracted information included publication year, country, setting, study design, sample size, staff roles, intervention components, comparator characteristics, follow-up duration, and reported outcomes. Workflow outcomes included scheduling workload, staff time, turnover intervals, procedure volume, and nonattendance. Patient-related outcomes included colonoscopy completion, bowel-preparation adequacy, patient experience, and adverse events. Randomized and analyzed populations were recorded separately, and reported estimates retained their original denominators and assessment periods.

Two authors assessed risk of bias using RoB 2 for randomized trials and ROBINS-I for nonrandomized intervention studies. Judgments considered allocation, confounding, missing data, outcome measurement, and selective reporting, with disagreements resolved through consensus. Findings were synthesized narratively according to intervention mechanism and outcome domain. Direct administrative interventions were distinguished from broader navigation and multidisciplinary workflow programs. Statistical pooling was not performed because interventions, comparators, outcome definitions, and follow-up periods differed. Interpretation addressed methodological limitations, precision, consistency, and applicability, while distinguishing measured

operational improvements from inferred clinical benefits.

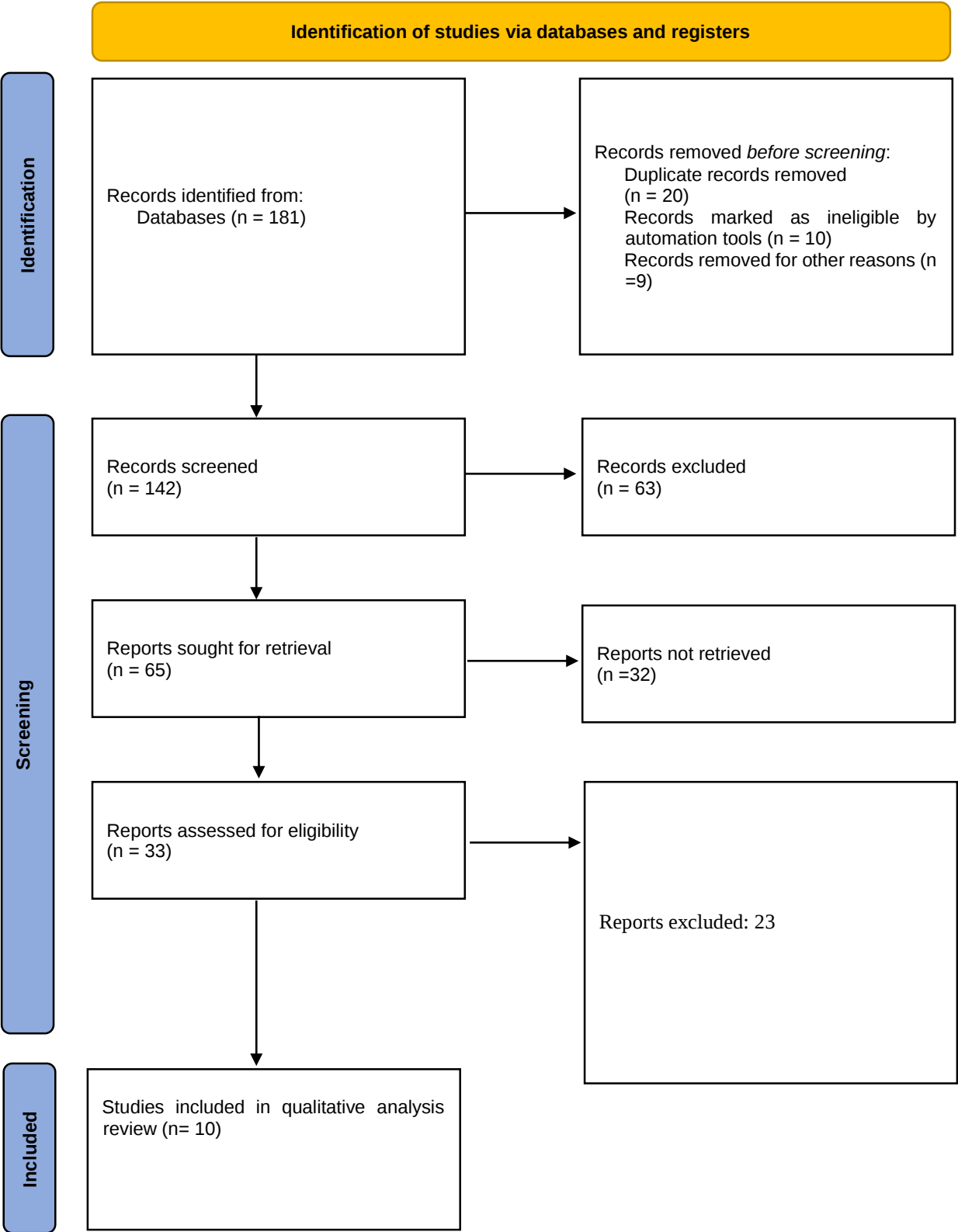


Figure 1: PRISMA flow chart

Results

Ten original intervention studies are summarized in Tables 1 and 2, beginning with direct scheduling and documentation interventions. Fairchild and colleagues reported that centralized cross-site scheduling reduced average telephone answering time from over 100 seconds to 38 seconds and saved 115 staff hours during implementation (8). MacPhail and colleagues evaluated 180 procedures performed by one endoscopist, finding 34% and 71% reductions in history-and-physical documentation and procedure-report time, respectively (9).

Bradley and colleagues evaluated successive organizational changes using a plan-do-study-act approach, with the initial anesthesia intervention reducing turnover time by 15.5 minutes (95% confidence interval, 3.9–27.1). Later changes combined front-loaded scheduling with parallel preparation and produced an 18% increase in procedure volume. The contribution of administrative scheduling remained inseparable from the accompanying clinical workflow changes (10). DeGroff and colleagues reported higher six-month colonoscopy completion with lay navigation than usual care, at 61.1% versus 53.2%, respectively. Preparation adequacy remained similar, showing that improved access did not automatically translate into improved cleansing quality (11).

Green and colleagues randomized 147 participants, with 140 contributing to the principal analysis, to nurse navigation or usual care incorporating a registry and physician reminders. Adjusted six-month completion was 91.0% versus 80.8%, with an adjusted difference of 10.1 percentage points that

did not reach statistical significance (12). Coronado and colleagues subsequently evaluated navigation targeted to patients with a predicted completion probability of 70% or lower. Among 415 analyzed participants, six-month completion reached approximately 76% with navigation and 65% with usual care, with a hazard ratio of 1.35 (13). These trials used different baseline support systems and populations, limiting direct comparison of intervention magnitude (12,13).

In a later community health center trial, Coronado and colleagues analyzed 967 participants following abnormal stool testing (14). Twelve-month completion was 55.1% with navigation versus 42.1% with usual care, an absolute difference of 13.0 percentage points (95% confidence interval, 6.5–19.4) (14). Lam and colleagues randomized 2,225 patients and reported nonattendance of 8.9% with text reminders versus 11.9% with standard care. Their study found no significant difference in overall preparation quality or procedural completion, separating appointment attendance from other dimensions of successful endoscopy (15).

Solonowicz and colleagues randomized 1,625 patients and reduced nonattendance from 14% to 8% using digital navigation. Overall preparation adequacy did not differ significantly, although screening and surveillance examinations showed a subgroup improvement (16). Mahmud and colleagues randomized 753 patients and found no benefit for attendance with good or excellent preparation: 53.1% with messaging versus 54.4% with usual care (17). Together, these digital trials demonstrate variable effectiveness rather than a uniform reminder effect (15–17). The reported outcomes used different units, including staff hours, clinician minutes, procedure volumes, and patient

completion proportions, which further restricted direct comparison between interventions and interpretation of their overall effectiveness (8–17). Both reminder and navigation interventions were evaluated against existing services, making reported effects estimates of additional benefit

beyond the support already available locally (11–17). Across the intervention evidence, endpoints primarily captured workflow, attendance, completion, or preparation, leaving effects on complications and mortality unestablished (8–17).

Table 1. Characteristics of the included studies

Study	Design and setting	Sample or evaluation unit	Support evaluated
Fairchild, 2016 (8)	Multisite service improvement; United States	Scheduling service; patient total unavailable in abstract	Technology-assisted booking by one coordinator across sites, reducing handoffs to a second coordinator
MacPhail, 2018 (9)	Prospective comparative study; United States	180 procedures; one endoscopist	Research assistants scribed assessment notes and procedure reports; comparison involved physician documentation
Bradley, 2024 (10)	Phased quality improvement; United States	673 patients across three phases	Preprocedure anesthesia visits, revised scheduling, and parallel preparation within a multidisciplinary intervention
DeGroff, 2017 (11)	Randomized trial; United States	856 randomized; 840 in main tables	Bilingual lay navigators addressed scheduling, preparation access, transport, and communication barriers
Green, 2014 (12)	Randomized trial; United States	147 randomized; 140 analyzed	Nurse navigation added to an existing positive-test registry and physician reminder system
Coronado, 2021 (13)	Randomized trial; United States	495 randomized; 415 analyzed	Nurse navigation targeted patients with predicted follow-up completion of 70% or lower
Coronado, 2025 (14)	Randomized trial; United States	985 enrolled; 967 analyzed	Bilingual telephone navigation after abnormal stool testing across a community health center network
Lam, 2021 (15)	Randomized trial; Hong Kong	2,225 randomized	Appointment reminder by text message added to standard outpatient colonoscopy arrangements
Solonowicz, 2022 (16)	Randomized quality improvement; United States	1,625 randomized	Timed preparation messages added to paper instructions and nursing calls
Mahmud, 2021 (17)	Randomized trial; United States	753 randomized	Automated educational and reminder messages added during the week before colonoscopy

Table 2. Workflow and patient-related findings

Study	Outcome and comparison	Reported finding
Fairchild (8)	Telephone answering time; before versus after	Over 100 versus 38 seconds; 115 staff hours saved
MacPhail (9)	Documentation time; scribe versus physician	History-and-physical time decreased 34%; report time decreased 71%
Bradley (10)	Turnover and procedure volume across phases	Turnover decreased 15.5 minutes; volume increased 18%
DeGroff (11)	Six-month completion; navigation versus control	61.1% versus 53.2%; P=0.021

Study	Outcome and comparison	Reported finding
Green (12)	Adjusted six-month completion; navigation versus control	91.0% versus 80.8%; P=0.10
Coronado, 2021 (13)	Six-month completion; navigation versus control	Approximately 76% versus 65%; HR 1.35
Coronado, 2025 (14)	Twelve-month completion; navigation versus control	55.1% versus 42.1%; difference 13.0 percentage points
Lam (15)	Nonattendance; messaging versus control	8.9% versus 11.9%; P=0.022
Solonowicz (16)	Nonattendance; messaging versus control	8% versus 14%; P<0.0001
Mahmud (17)	Attendance with good/excellent preparation; messaging versus control	53.1% versus 54.4%; P=0.73

Discussion

The evidence supports administrative support as an influence on access and operational performance, with the most direct findings arising from scheduling and documentation interventions (8,9). These studies address work closely related to secretarial practice, including appointment coordination and record production, while navigation studies examine broader support packages (8,9,11). Consequently, benefits from navigation are not attributable exclusively to medical secretaries, when interventions include nursing input, preparation counseling, or assistance with personal barriers (11–14). The practical implication is to define the task being improved and the professional responsibility attached to it before translating intervention results into staffing decisions (8–14).

Economic studies provide a complementary perspective on implementation because saved time and additional completed procedures have distinct financial consequences (18). Jandorf and colleagues found positive institutional net income from a navigation program, with the result dependent on local procedure revenues and program expenditure (18). Kim and colleagues reported incremental program costs of \$148–\$359 per additional successfully navigated patient across modeled attendance scenarios (19). Ladabaum and colleagues evaluated longer-term cost-effectiveness using a decision model, with conclusions sensitive to adherence, navigation cost, and the screening comparator (20). These findings support local budget assessment rather than assuming that an improvement in attendance produces universal cost savings (18–20). Clear separation of staff time, institutional revenue, and

patient expenditure is essential because these outcomes reflect different perspectives and are not equivalent economic benefits (18–20).

Clinical benefit requires successful examination as well as attendance, since colonoscopy quality influences subsequent cancer risk (21). Corley and colleagues demonstrated an inverse association between endoscopists' adenoma detection rates and interval colorectal cancer and death (21). Kaminski and colleagues similarly linked adenoma detection performance with interval cancer risk, reinforcing the importance of preserving examination quality when increasing throughput (22). Thus, administrative performance indicators warrant interpretation alongside preparation adequacy and established endoscopic quality measures, rather than treating additional procedure volume as sufficient evidence of improved health outcomes (7,10,21,22). The mortality implications of better administrative support remain an inference across separate evidence streams (6,11–14,21,22).

Variation among reminder trials also matters for service planning because identical delivery channels do not guarantee equivalent results (15–17). Lam and Solonowicz reported reduced nonattendance, whereas Mahmud found no improvement in the composite of attendance and satisfactory preparation (15–17). Differences in message content, usual-care contact, populations, and outcome definitions provide plausible explanations for this inconsistency, although comparisons between studies do not isolate their individual contributions (15–17). Similarly, Green's high usual-care completion illustrates the importance of existing registries and reminders when interpreting the incremental value of additional navigation (12).

Targeting support to documented barriers is a reasonable implementation inference from these trials (11–17).

Several limitations constrain transferability, including single-center operational studies, bundled interventions, and the predominance of colonoscopy pathways within the patient-support evidence. The scribing study involved one endoscopist, and the workflow redesign lacked randomized separation of its individual components. These features limit causal attribution and generalization to other staff groups, institutions, and endoscopic procedures. Future evaluations require staff-role descriptions, comparable denominators, patient experience measures, and concurrent assessment of workload and clinical quality.

Conclusion

Administrative and secretarial functions contribute to efficient endoscopy pathways through scheduling, documentation, communication, and coordination. The strongest intervention evidence concerns reduced workload, fewer missed appointments, and increased colonoscopy completion. Navigation produced meaningful improvements in several trials, while automated reminder effects varied across settings. Evidence directly isolating medical secretaries remains limited, and effects on complications or mortality are not established. Service development requires clear task allocation, reliable referral tracking, appropriate escalation, and measurement of both efficiency and examination quality.

Abbreviations

HR: Hazard ratio.

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

RoB 2: Revised Cochrane risk-of-bias tool for randomized trials.

ROBINS-I: Risk Of Bias In Non-randomized Studies of Interventions.

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