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Timing of procedure and compliance to out-patient endoscopy among an underserved population in an inner city tertiary institution

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Abstract

Purpose—Anecdotal evidence suggests that patient compliance with colonoscopy is poorer with Monday procedures and better during winter months since “there is not much else to do”. We examined patients’ compliance to scheduled out-patient endoscopy by time of the day, days of the week and seasons of the year.

Methods—We included 2,873 patients who were scheduled for endoscopy from September 2009 to August 2010. Compliant patients were those who showed up for their procedures while non-compliant patients were those who did not show up, without canceling or rescheduling their procedures up to 24 hours prior to their scheduled procedures. We used logistic regression models to evaluate the association between the timing of the scheduled procedure and compliance.

Results—574 (20%) patients did not show up. There was no difference in compliance by time of day of the procedures. However, when compared with patients scheduled for procedures on Monday, there was a trend towards improved adherence as the week progressed, becoming significant on Friday (OR=1.46; 95% CI: 1.06–2.00). There was also better compliance in the warmer months.

Conclusions—Non-compliance with out-patient endoscopy is substantial among underserved populations with limited predictive pattern of compliance by the timing of the procedures.

Keywords

Endoscopy; colonoscopy; adherence; cancer disparities; epidemiology

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INTRODUCTION

Patient absenteeism for outpatient endoscopy wastes limited resources and reduces the productivity of care providers. Unlike primary care clinics where patients are over booked in anticipation of no-shows, endoscopy suites can only schedule a finite number of patients because of the need for dedicated resources. Patients referred for endoscopies often do not undergo the procedure because of non-scheduling after referral (1) or because they forgot their appointments (2). Some predictors of poor adherence are female sex, younger age, and government-sponsored insurance coverage (1). A history of truancy for clinic appointments is also a predictor of non-compliance for scheduled out-patient endoscopy (3).

Lack of perceived risk for colorectal cancer, fear of pain, concerns about modesty, bowel preparation, cost, competing demands, and long waiting times have also been found to contribute to lack of adherence (2, 4). Endoscopy suites have attempted various maneuvers to decrease the number of no-shows. Notification of patients by telephone (5) or text message (6) reminders and mailed pre-procedural pamphlets (1, 7) have been shown to decrease the number of no shows to a certain degree.

Recent studies have suggested that colonoscopy outcome as measured by polyp detection rate may vary by time of the day of the scheduled procedures with better detection in the mornings (8–10), but polyp detection may be more stable with 3 – hour shift schedule (11). There is limited information about whether patient compliance varies by the timing of the procedure. Understanding this relationship is especially important among African Americans, a population with low colorectal cancer screening rates (12) and the highest burden from colorectal cancer (13, 14). This is particularly important since colonoscopy is fast becoming the dominant screening modality in the United States and it is the diagnostic procedure performed following abnormal screening from other screening strategies (15, 16). In this study, we investigated whether the time of day, day of the week or the season of the scheduled procedure affect patient compliance with out-patient endoscopy in an inner city tertiary institution.

METHODS

After obtaining an approval from Howard University's Institutional Review Board, we abstracted information about patients scheduled for an out-patient endoscopy from the final endoscopy schedule from September 2009 to August 2010 at Howard University Hospital, an inner city tertiary institution in Washington DC. Our facility is a not-for-profit organization that serves predominantly African Americans in the District of Columbia. The final endoscopy schedule is typically released in the afternoon preceding the day of the procedures, and on Friday afternoons for Monday procedures. We excluded procedures that were cancelled by the endoscopists. Therefore, the present study only focused on patients who were expected for their scheduled procedures the following endoscopy day. These are patients who did not cancel or reschedule or notify the facility of their inability to adhere to the care plan up to 24 hours before their procedures. We do not have open access scheduling. Therefore, all patients scheduled have been evaluated by the gastrointestinal endoscopists (gastroenterologists or surgeons) who scheduled the procedures. The typical interval between clinic consultation and scheduled out-patient procedure date is 2 to 4 weeks. In addition to the information provided during the consultation, patients also received an information booklet with detailed information about their procedure, required preparation and instructions on how to cancel if they were unable to adhere to their scheduled appointment. Rarely did patients call to cancel their appointments; they simply failed to show up. Nonetheless, an ambulatory surgical center's staff typically called scheduled patients in the evening prior to the procedures using the final endoscopy schedule,

but this information was not tracked. We did not have a dedicated patient navigator for our endoscopy suite. We defined compliant patients as those who came to the endoscopy suite for their procedures whether the procedures were eventually performed or not (in a few instances the procedures were not performed because the patient was medically unstable, had no escort, did not follow bowel preparation instructions, or informed consent could not be obtained). We abstracted patient information, day and time of the scheduled procedure and type of procedures' scheduled.

Statistical analysis

We categorized procedures as esophago-gastro-duodenoscopy (EGD), colonoscopy only or concomitant EGD and colonoscopy. EGD with endoscopic ultrasound and endoscopic retrograde cholangiopancreatography (ERCP) were included in the EGD category. We used Student t-test for comparison of mean age and chi square tests to compare categorical variables by the time of the day (morning versus afternoon) of the scheduled procedures. We used logistic regression models to evaluate the association of the scheduled procedure time with compliance with all endoscopic procedures. We subsequently restricted our analysis to patients who were scheduled for colonoscopy only and repeated our analysis. We adjusted for patient's age (continuous), sex, marital status, and type of healthcare insurance. We calculated odds ratios (OR) for compliance and 95% Confidence Intervals (CI). All reported P-values were based on two-sided tests. We used SAS Enterprise Guide 4.2 (Cary, NC) for our analyses.

RESULTS

A total of 2,873 patients scheduled for procedures from September 2009 to August 2010 were examined. The mean age of the patients was 55.2 years, 1,707 (59.4%) were females and 31 (1.1%) patients were uninsured (self pay). Table 1 shows the baseline patient demographics with comparison by morning versus afternoon schedule. Patients scheduled in the morning were slightly older (56.1 vs. 53.8 years; P value < 0.001) and colonoscopies were more likely to be scheduled in the morning. There was no difference in the time of day of scheduled procedures by sex.

A total of 574 (20%) patients did not show up for their procedures. There was no significant difference in adherence for procedures scheduled in the morning when compared to those scheduled in the afternoon (OR = 1.21; 95% CI: 0.96 – 1.53). We observed a suggestive pattern of gradually improving adherence (P trend = 0.10) as the week progressed with a modest increased adherence on Fridays when compared to Mondays (OR = 1.46; 95% CI: 1.06 – 2.00). Contrary to our hypothesis, we observed significantly improved adherence in warmer months particularly in summer when compared to winter season (P trend = 0.009). When we restricted our analysis to patients scheduled for colonoscopy only (n = 1,813), we observed similar results except that patients scheduled on Thursdays (OR = 1.23; 95% CI: 1.13 – 1.83) were also more likely to be compliant in addition to those scheduled on Fridays.

DISCUSSION

We evaluated the association of patient adherence for scheduled out-patient endoscopy by time of day, day of week and the season. We observed that patients were more likely to be compliant with their procedures as the week progressed from Mondays to Fridays and in the warmer months, particularly for colonoscopy. In our institution, colonoscopy is the dominant screening method for colorectal screening. While multiple factors may influence patients' compliance, our study suggests that when feasible, patients that are envisaged to have challenges with being compliant with their medical care may be better scheduled in the latter days of the week. Nonetheless, other efforts to improve adherence are needed. As part

of our quality improvement, we have added another staff member to handle our endoscopy schedule and call patients five days prior to their procedures and report any challenges directly to the endoscopist. We plan to evaluate the effect of this intervention in the nearest future.

Evidence suggests that screening colonoscopy can reduce the incidence and mortality from colorectal cancer (17–19). However, despite availability and access to such procedures a large proportion of patients, particularly African Americans, are not up to date with screening recommendations (15, 20). Healthcare access has been suggested as a possible explanation for this; however our population for the most part was insured. Previous studies have demonstrated that patients with access to healthcare can still fail to complete colonoscopic screening even though the procedure was recommended by and discussed with their primary care physician (1, 3). In open access settings (where the primary care physician can schedule their patients directly without prior consultation with a gastroenterologists), non-compliance as high as 40% have been reported for colonoscopy (1, 3, 21–23). In our institution where the endoscopist performing the procedure meets the patient prior to scheduling, we observed improved compliance but 20% non-compliance is still a substantial waste of resources.

Our patients were educated about the importance of the procedure and any questions or concerns were addressed during the initial clinic consultation. Patients were also provided with an educational pamphlet with additional information that included instructions for cancellation of the procedure. Most procedures were scheduled within 2–4 weeks from the date of the first encounter with the endoscopist on a day and time that was convenient for the patient. Thus, health system barriers such as scheduling challenges and long waiting times probably did not contribute to patient absenteeism in our population. In addition, a phone reminder was also provided the day prior to the procedure even though this information was not tracked. The use of patient navigators may improve adherence (24, 25), but this will be at an additional cost or as an externally funded demonstration project.

Some recent studies have shown that polyp detection rates vary by time of day and scheduling sequence during the same shift (8 – 11). Chan et al. (8) reported that early morning colonoscopy yielded 27% more polyps than later procedures. Sanaka et al. (9) in their retrospective study of 3,619 colonoscopies also reported that the adenoma detection rate was 1.2 times higher for morning procedures. We did not find any difference in compliance whether patients were scheduled in the morning or afternoon.

We noted an improved adherence particularly for colonoscopy as the week progressed, with lowest adherence on Mondays and Tuesdays. This is comparable to the findings of Adams et al. (26). In their review of 2,157 scheduled out-patient procedures in a tertiary referral public hospital in Australia, the authors reported that 263 (12.2%) were non compliant. They noted that 39% of the non attended procedures were scheduled on Mondays, 22% on Tuesdays but the best compliance was noted on Wednesdays with only 5% of non attended scheduled procedures. Compliance was worse on Mondays and Tuesdays in our study too, but compliance was best for Friday procedures. We speculate that the poor adherence for Monday procedures may be due to patients having other challenges on the weekend that interfered with the bowel preparation demands or due to increased home and work commitments at the beginning of the week.

We hypothesized that patients were likely to be more compliant with out-patient endoscopy during winter months since “there is not much else to do”. However, our data suggest that patients are actually more compliant during the warmer months. We are not aware of any previous study that has evaluated seasonal variation in compliance with scheduled

endoscopic procedure for comparison with our study. However, Segarajasingam et al. (27) also reported that colorectal cancer screening with CT colonography was lower during winter months in their study. Further studies are needed to evaluate seasonal variation in uptake and yield of colorectal cancer screening since this may have important resource allocation implication particularly in regions with challenging weather conditions. If patients are indeed less compliant during colder months, additional interventions such as transportation assistance should be provided at this time of the year.

A major strength of our study is that we studied a large population of underserved men and women. Furthermore, the practice in our institution enabled us to reduce the contributory reasons for non adherence identified in previous studies such as long intervals between scheduling and procedure, lack of initial consultation by endoscopist, and lack of health insurance coverage. Our study has its limitations. This was a retrospective study and we reported a single institution's experience. Furthermore, we did not have other information such as highest education attained, comorbidities, lifestyle factors (such as body mass index and smoking status) and the presence of other significant social ties which may also affect compliance (28).

In conclusion, we found a substantial rate of non compliance among our underserved population with limited predictive pattern by timing of the procedures. Perhaps, scheduling procedures in the morning, offering later weekday endoscopy time and increasing institutional logistic support (such as transportation) during winter for underserved patients with compliance challenges may improve adherence. Since the utilization of colonoscopy as a screening modality is increasing while the usage of other screening modalities is either decreasing, not widely available or not covered by third party payers, targeted interventions to reduce no shows for colonoscopy will be necessary to reduce colorectal cancer disparity.

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Table 1

Selected demographic factors of the study population and comparison by time of day of all scheduled procedures

Characteristics	Morning (N=1753)	Afternoon (N=1120)	P value
Age in years (SD)	56.1 (11.7)	53.8 (12.2)	< 0.001
Sex			
Female	1050 (61.5%)	657 (38.5%)	0.51
Male	703 (60.3%)	463 (39.7%)	
Marital status			
Married	446 (64.6%)	244 (35.4%)	0.03
Not Married	1307 (59.9%)	876 (40.1%)	
Insurance Status			< 0.001
Medicaid	385 (59.8%)	259 (40.2%)	
Medicare	365 (68.5%)	168 (31.5%)	
Other Govt. Insurance	401 (64.5%)	221 (35.5%)	
Private Insurance	583 (55.9%)	460 (44.1%)	
Uninsured	19 (61.3%)	12 (38.7%)	
Type of Procedure			< 0.001
EGD *	259 (51.3%)	246 (48.7%)	
Colonoscopy	1154 (63.7%)	659 (36.3%)	
EGD plus colonoscopy	340 (61.3%)	215 (38.7%)	

* EGD = Esophago-gastro-duodenoscopy

Table 2

Procedure time, weekday, season and compliance to all scheduled out-patient endoscopy

Timing of the procedure	Compliant n (%)	Non compliant n (%)	Compliant versus non Compliant OR (95% CI) *
Morning	1419 (80.9%)	334 (19.1%)	Reference
Afternoon	880 (78.6%)	240 (21.4%)	1.11 (0.92 – 1.35)
Monday	507 (77.9%)	144 (22.1%)	Reference
Tuesday	571 (78.5%)	156 (21.5%)	1.06 (0.81 – 1.37)
Wednesday	356 (79.1%)	94 (20.9%)	1.06 (0.79 – 1.43)
Thursday	473 (81.6%)	107 (18.4%)	1.31 (0.98 – 1.74)
Friday	392 (84.3%)	73 (15.7%)	1.46 (1.06 – 2.00)
			P trend = 0.10
Winter	285 (74.2%)	99 (25.8%)	Reference
Fall	517 (79.3%)	135 (20.7%)	1.29 (0.95 – 1.74)
Spring	623 (81.8%)	139 (18.2%)	1.57 (1.16 – 2.11)
Summer	874 (81.3%)	201 (18.7%)	1.535 (1.16 – 2.03)
			P trend = 0.009

* Adjusted for age, sex, marital status and insurance status

Table 3

Procedure time, weekday, season and compliance to colonoscopy only schedule

Timing of the procedure	Compliant n (%)	Non compliant n (%)	Compliant versus non Compliant OR (95% CI)*
Morning	938 (81.3%)	216 (18.7%)	Reference
Afternoon	507 (76.9%)	152 (23.1%)	1.22 (0.72 – 1.33)
Monday	293 (76.7%)	89 (23.3%)	Reference
Tuesday	337 (76.9%)	101 (23.1%)	0.89 (0.82 – 1.43)
Wednesday	224 (79.2%)	59 (20.8%)	1.16 (0.70 – 1.81)
Thursday	305 (82.7%)	64 (17.3%)	1.23 (1.13 – 1.83)
Friday	286 (83.9%)	55 (16.1%)	1.33 (1.07 – 2.03)
			P trend = 0.042
Winter	173 (75.5%)	56 (24.5%)	Reference
Fall	322 (77.0%)	96 (23.0%)	1.18 (0.88 – 1.88)
Spring	366 (80.3%)	90 (19.7%)	1.23 (1.021 – 2.01)
Summer	584 (82.3%)	126 (17.7%)	1.74 (1.40 – 2.27)
			P trend = 0.007

* Adjusted for age, sex, marital status and insurance status