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Reducing No-Show Rates in an Outpatient GI Endoscopy Lab

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Reducing No-Show Rates in an Outpatient GI Endoscopy Lab

A DNP Project Submitted to the

Graduate Faculty

of Jacksonville State University

in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Nursing Practice

By

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Jacksonville, Alabama

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Abstract

Background: Patients who do not attend their scheduled appointments cost the healthcare industry approximately $150 billion annually. They are at higher risk of missed diagnoses, delay in care, and increased morbidity and mortality.

Purpose: This quality improvement project aimed to determine the effectiveness of serial reminders using phone calls and electronic messaging to reduce no-shows for patients scheduled for gastrointestinal (GI) endoscopy.

Methods: No-show data was retroactively analyzed from June 2023 to December 2023 and compared to post-implementation data from February 2024 to March 2024. For eight weeks, a trained staff team called patients scheduled for endoscopic procedures seven days before the procedure. Reminders were sent via electronic messaging three days before scheduled procedures. One day prior to the procedure, the pre-admission testing team made live calls.

Results: During the eight-week intervention period, the no-show rate was reduced from 2.78% to 0.41%. A two-tailed z-score was used to calculate the statistical significance for the two population proportions. The value of z was calculated at 3.1785, and the *p value*=0.00148, revealing significance at $p<0.05$.

Conclusion: The project results were statistically significant, further supporting the efficacy of the intervention. The data emphasizes the importance of implementing a targeted strategy, such as serial reminders, to mitigate appointment no-shows and cancellations, ultimately enhancing healthcare service delivery and patient outcomes.

Keywords*:* no-shows, cancellations, non-attendance, serial reminders.

Acknowledgments

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Lastly, I would be remiss in not mentioning my family, especially my husband, son, and parents. I thank my wonderful husband, Hai Vo, who, through my late nights and early mornings, allowed me to concentrate solely on this project. My son, Elijah, whom I hope to continue to inspire, to reach for the stars. My parents, Dr. Wyndioto and Gloria Chisela, whose American dream has come full circle. Their belief in me has kept my spirits and motivation high during this process.

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Reducing No-Show Rates in an Outpatient GI Endoscopy Lab

No-shows have been noted to impact all medical practices. However, they also significantly impact gastrointestinal (GI) endoscopy facilities, mainly due to the extended time needed for procedure preparations and the inability to reschedule other patients (Marbouh et al., 2020; Tauscher, 2020). When patients miss their appointments without notice or reason, it leads to longer wait times, fragmented care, less efficient healthcare systems, and lower satisfaction for both patients and clinical staff (Amberger & Schreyer, 2024; Shuja et al., 2019; Valero-Bover et al., 2022). Compliance with scheduled appointments is the key to successful health management for the GI patient population.

Background

Endoscopy cancellation and non-attendance rates in the United States average around 21% (Hadaib et al., 2022). Endoscopy labs incur high consumption costs due to staffing and the use of expensive resources. GI procedures are estimated to have a net loss average of $725 per day for the average facility (Shuja et al., 2019). The cost of no-shows to the healthcare industry is roughly $150 billion a year (Tauscher, 2020). The annual gross revenue loss due to no-shows ranges from $84,000 to $384,000 (Lagman et al., 2020). The Consumer Shoppable Services for Health Maintenance Organization HMO pricing of five standard health plans reveals an average cost of diagnostic upper endoscopy for the facility hospital organization to be $3036. While diagnostic examination of the large bowel via colonoscopy averaged $3861. These averages do not account for biopsy or removal of polyps or growths (Wellstar Health Systems, 2023). The estimated revenue loss from colonoscopy and endoscopy no-shows at the project facility is approximately $1000 per procedure. No-shows increase the financial burden on facilities and impose rising costs on patients. This cost escalation diminishes patient outcomes, as individuals

who miss appointments face a higher risk of missed diagnoses, delays in care, and increased morbidity and mortality (Smith et al., 2022).

Problem Identification

The 2019 GI Operations Benchmarking Survey by the Association of Gastroenterology Endoscopy (ASGE) indicated a mean endoscopy no-show rate of 6.52%, with rates ranging from 0.63% to 21.02% (Tauscher, 2020). The no-show rate in the GI endoscopy lab was 2.78%. The endoscopy lab scheduled 1,117 endoscopic procedures over eight months preceding the intervention, with 31 patients identified as no-shows. ASGE's recommended strategies for reducing no-shows include implementing written policies with clear financial agreements, utilizing automated reminders via various channels, and employing multiple reminders leading up to the procedure (Tauscher, 2020).

Problem Statement and PICOT Question

No-shows disrupt the workflow of healthcare facilities and result in wasted resources and potential delays in patient care. A persistent challenge healthcare providers face is the high rate of patient no-shows for scheduled endoscopic procedures. Despite existing appointment reminder systems, the rate of no-shows remains significant, indicating the need for more effective strategies to reduce no-shows. In the GI endoscopy lab, the no-show rate can surpass the mean endoscopy rate identified by the ASGE. In patients scheduled for GI endoscopy, does the use of serial appointment reminders compared to a single appointment reminder decrease the no-show rate within eight weeks?

Review of Literature

This literature review incorporated a thorough search strategy that leverages various search engines and databases, including PubMed, ScienceDirect, CINAHL, EBSCOhost,

ProQuest Central, and PsycINFO. Keywords used in the search process encompassed a range of terms, including no-shows, cancellations, non-attendance, endoscopy, GI endoscopy, and appointment keeping. Delimiters were applied, such as limiting the search to publications within the past five years, English language, full-text availability, and peer-reviewed journals. Following strict exclusion and inclusion criteria, 30 articles were selected, ranging from Level I to IV evidence. Specific articles were identified based on relevance to the process improvement with time frames from 2019 to the present. However, only seminal articles were included in the review if no other articles were identified. The articles contained prospective single-blinded randomized controlled trials, prospective randomized, parallel-design clinical trials, and systematic reviews. The themes identified throughout this literature review were the impact of no-shows on health outcomes and healthcare facilities and the use of serial reminders via telephone, electronic messaging, or text messaging.

Impact of No-Shows on Health Outcomes

No-shows and cancellations have been associated with increased morbidity and mortality. McQueenie et al. (2019) noted that patients with multiple chronic co-morbidities who missed two or more appointments a year have a three-fold increase in mortality compared to patients who do not miss appointments. Consistent attendance at scheduled appointments plays a critical role in the effective management of gastrointestinal patients. Attending appointments facilitates timely diagnosis and appropriate treatment and ultimately improves health outcomes. Patients can significantly enhance their overall health and well-being by prioritizing a steadfast commitment to attending all scheduled appointments (Yılmaz & Kocyigit, 2022).

Patients with multiple chronic conditions who miss appointments face a heightened risk of mortality. This emphasizes the urgency of addressing no-shows within the clinic under study,

given the pivotal role of consistent attendance in effectively managing gastrointestinal patients. By emphasizing the importance of attending appointments on time for timely diagnosis and treatment, the aim was to enhance health outcomes and overall patient well-being, aligning with the findings of Yılmaz and Kocyigit (2022).

The Impact of No-Shows on Healthcare Facilities

Patient no-shows significantly strain healthcare systems in GI endoscopy units, where resources are often limited and equipment is expensive. No-shows jeopardize patient health outcomes and have a ripple effect by increasing emergency department admissions and hospitalizations (Berg et al., 2013; Yılmaz & Kocyigit, 2022). A cross-sectional study revealed that no-shows and cancellations cause 16%-54% of operating losses for medical insurance in various healthcare settings (Marbouh et al., 2020). Analysis of the endoscopy labs revealed a total net loss of $46,500. No-shows lead to discontinuation of care, decreased provider productivity, and increased wait times for other patients needing care or procedures, reducing patient satisfaction (Marbouh et al., 2020; Dantas et al., 2018).

The Effectiveness and Use of Text Message Appointment Reminders

Several studies have highlighted the effectiveness of text message appointment reminders (TMAR) compared to other reminder methods in various medical settings. Gallegos et al. (2023) conducted a study and found that TMAR was more cost-effective and user-friendly than other reminder methods. Nevertheless, Balakrishnan et al. (2019)noted a positive impact of text messaging on clinical attendance for appointments, particularly for surveillance screenings such as colorectal, breast, and cervical cancer. Low et al. (2021) found that patients were significantly more likely to miss their appointments without a text message reminder. Moreover, compared to

no reminders at all, text message appointment reminders have been shown to significantly encourage users to attend appointments or cancel them in advance (Low et al., 2021). Patients who received electronic messaging in conjunction with a day seven call were more likely to attend their scheduled procedures. Lam et al. (2020) demonstrated that text message reminders sent 7 to 10 days before outpatient colonoscopy procedures reduced nonattendance rates. These findings collectively highlight the potential of text messaging as a valuable tool in improving appointment attendance and healthcare outcomes. However, further research, particularly randomized controlled trials directly comparing text messaging with other reminder methods, is warranted to better understand its comparative efficacy in medical settings (Iribarren et al., 2021).

The Effectiveness and Use of Phone Call Reminders

Staff phone calls, mainly serial reminders, have proven to be reliable for reducing no-show rates (Crable et al., 2020; Opon et al., 2020). Reminder calls made seven days before scheduled clinic appointments led to a 22% reduction in no-show rates compared to their control group participants (Shah et al., 2016). Telephone calls are also inexpensive but labor-intensive. Telephone calls are effective in reducing no-shows when they are classified as reminder plus. Reminders-plus telephone calls entail providing appointment reminders and additional information, including orientation, patients' medical history, and a review of systems (Gashu et al., 2021). Implementing reminder-plus calls, compared to simple reminders, lowers no-shows and cancellation rates (Soos et al., 2020). Patients who confirmed attendance during their day seven call were more likely to show up for their scheduled procedure. Cancellation or rescheduling was more likely to occur during this phone call (Woodside, 2023). While telephone calls are effective and inexpensive, they are more labor intensive as they demand more staff

time. Despite this, live call reminders are more effective than automated appointment reminders in reducing no-shows and cancellations (Woodside, 2023).

Theoretical Framework

The Health Belief Model (HBM) is a valuable framework for evaluating health promotion programs and identifying factors associated with poor appointment adherence (Alhazmi et al., 2022). This model examines patients' beliefs about their health conditions, providing insight into their health behaviors. According to the HBM, individuals are motivated to take health-related actions if they perceive themselves at risk of illness and believe that preventive measures are effective (Ooi et al., 2024).

In the context of GI health, patients may be motivated to undergo screening procedures such as colonoscopy or endoscopy if they perceive themselves to be at risk for cancer. However, factors such as the perceived threat of a cancer diagnosis or complications from the procedure can decrease patients' motivation, leading to cancellations or no-shows (Ooi et al., 2024). Barriers to undergoing endoscopic evaluations, such as financial concerns or psychological factors like anxiety, can deter patients from attending scheduled procedures (Alhazmi et al., 2022; Yılmaz & Kocyigit, 2022). These perceived barriers can undermine patients' intentions to participate in essential screenings. Cues to action are necessary to address these challenges and motivate patients to attend appointments. Serial reminders, particularly those that provide additional information about the risks and benefits of procedures, serve as cues to action (Zampetakis & Melas, 2021). By delivering reminders that emphasize the importance of the appointment and provide relevant information, healthcare providers can effectively prompt patients to act and attend their scheduled procedures (Zampetakis & Melas, 2021).

A descriptive cross-sectional study highlighted the significance of modified components of the Health Belief Model and the absence of cues to action, such as reminders, in explaining poor appointment adherence (Zampetakis & Melas, 2021). Therefore, identifying and understanding the critical reasons for non-compliance validates serial reminders with reminder-plus information as a call to action to improve appointment adherence. Leveraging HBM and implementing serial reminders with informative content can help increase appointment adherence among GI patients. By addressing patients' beliefs, perceptions, and barriers to care, healthcare providers can enhance patient engagement and promote better health outcomes.

Quality Improvement Methodology

This quality improvement project was implemented using the Plan-Do-Study-Act (PDSA) cycle to improve the clinical process for patient reminders and scheduling, focusing on reducing no-show rates. The PDSA cycle, known for its four-stage approach, guides the initiative through planning, implementation, evaluation, and adjustment (Taylor et al., 2013). Ensuring consistency in the implementation was done by affirming that reminders were sent out as planned and that all staff were adequately trained on the project process. Analysis of incoming data was performed to evaluate the project's progress. Data analysis allowed the project leader to determine the success of the implementation in achieving its objectives. Based on the data analysis, adjustments were made as necessary. The collected data was disseminated and assessed to ensure successful project development. The use of continuous PDSA cycles ensured project success and sustainability.

Project Design

Before project implementation, the DNP student received Institutional Review Board approval (see Appendix A) and completed protection of human subject training, (see Appendix

B). The project design followed a QI change model approach in analyzing performance and adjusting for improvement. The intervention lasted eight weeks, Retrospective data collection was conducted to identify the current no-show rate in the endoscopy lab. Inclusion criteria for patient selections were as follows: patients were over 18 years old and scheduled for either colonoscopy or upper endoscopy; patients did not attend the procedure or had been given notification before the procedure. Exclusion criteria included notification of cancellation within 24 hours of the procedure, abortive cancellation day of the procedure reasons (i.e., ate prior to the procedure, deemed high risk per anesthesia, etc.). The medical assistant and registered nurse identified the population scheduled for GI endoscopy for each week using the endoscopy lab schedule. Each week, the patient list for scheduled endoscopies was printed out for the providers who performed procedures in the endoscopy lab. Deidentified data was extracted, including screening endoscopy, therapeutic vs. diagnostic endoscopy, open access vs. inpatient visit, and appointment dates.

Patients scheduled for colonoscopy/upper endoscopy were tracked via an Excel dataset spreadsheet. The medical assistants/registered nurses made live calls seven days before the scheduled procedure and called or sent electronic messages on day three before the procedure. During these calls, staff used the colonoscopy/endoscopy pre-call script to communicate pertinent pre-procedural details to patients. The pre-admission testing team placed reminder calls one day before the procedure. These serial dates allowed patients time to make the appropriate accommodations if necessary. The goal was to contact all scheduled patients weekly to review preparation details and confirm attendance.

Project Results and Evaluation

During the eight weeks of intervention implementation, a total of 483 procedures were scheduled, with a total of two patient no-shows. The no-show rate percentages were determined by dividing the total number of patients by the number of missed appointments per month. A two-tailed *z*-score was used to calculate the statistical significance for the two population proportions. The pooled sample proportion was calculated using p_1 (no-show rate before intervention) = 0.0292, p_2 (no-show rate after the intervention) =0.0041, and n_1 (number of scheduled procedures pre-intervention) =1117 and n_2 (number of scheduled procedures post-intervention) =483. Resulting in a pooled sample proportion of 0.0041. The standard of error (SE) was then calculated, equaling 0.1445. The calculated z-score of 3.1785, with a *p*-value of 0.00148, shows significance at the conventional alpha level of 0.05.

Despite the no-show rate remaining above the national average, implementing serial reminders in the endoscopy clinic led to significant positive outcomes. The decrease of 0.41% from 2.78% in the no-show rates indicates the intervention's effectiveness in reducing missed appointments, reflecting improved patient engagement and commitment to scheduled appointments. This reduction aligns with the ASGE benchmark, which identifies an average range of no-shows between 0.63% and 21.02%, with a mean of 6.52% (Tauscher, 2020), demonstrating progress towards best practices in endoscopy clinics and underscoring the clinic's dedication to optimizing patient attendance and enhancing overall efficiency. Additionally, the consistency and statistical significance of the results validate the intervention's effectiveness, suggesting a meaningful impact despite unaccounted external factors like seasonal variations and holiday schedules.

Conclusion

The comparison between pre-intervention and post-intervention data reveals a substantial decrease in the no-show rate, with practical implications for improving scheduling efficiency and serial reminders within the endoscopy lab and GI clinic. The decrease in no-show rates with serial reminders has implications for the endoscopy lab and GI clinic. These implications include improving scheduling efficiency by ensuring patients remember and attend their scheduled appointments. This allows the GI clinic to optimize its time and resources fully. Serial reminders increase patient engagement by encouraging patients to be informed and fostering a sense of responsibility and partnership in their healthcare decisions. Reducing no-show rates with serial reminders increases patient engagement. Reduction in no-show rates leads to better clinical outcomes by ensuring patients receive timely and necessary medical interventions such as early adenoma detection via colonoscopy (Crable et al., 2020). Reduced missed appointments also optimize resource use, highlighting the need for ongoing monitoring to assess long-term impact and identify areas for improvement (Williamson et al., 2021).

Some limitations were experienced in this project. The pre-intervention data observation spanned 32 weeks, whereas the intervention period lasted only eight weeks. This discrepancy in evaluation periods limits the scope of the analysis, potentially introducing bias to observed changes that may not be consistent over time. However, the more extended pre-intervention observation period provided a more comprehensive understanding of baseline behavior and variability than the shorter intervention period (Zeldow & Hatfield, 2021). Therefore, it is crucial to reiterate the need for ongoing monitoring and improvement to ensure the long-term success and sustainability of the project.

Errors in data acquisition and missing data elements were also noted, which included inaccurate identification of no-show rates, due to the lack of an automated attendance tracking system. Inaccuracy of patient attendance can result in incomplete patient records, misappropriation of resource allocation, and difficulty identifying patterns contributing to no-shows. Manual data input into spreadsheets can be prone to human error, thus highlighting the need for improved data management processes to enhance accuracy and reliability (Matarneh et al., 2022)..

In addition to collecting data on appointment attendance rates, the DNP student gathered staff feedback on scheduling and patient communication challenges. Through discussions and interviews, frontline staff insights conveyed operational inefficiencies and communication gaps. Additionally, a thorough review of existing practices was conducted to assess appointment scheduling processes, reminder systems, and relevant policies, aiming to identify areas for improvement in reducing no-show rates.

Effective methods for dissemination include communicating the project's benefits, approach, and implementation guidelines to the involved stakeholders within the service line. Additionally, ongoing monitoring and evaluation will be conducted to assess the long-term impact of the intervention and identify areas for further improvement in clinical practice. Plans for sustainability include implementing an automated attendance tracking system to reduce errors and improve data reliability across the nine clinics of the service line. As well as implementing serial reminders as a standard protocol. A task force will be developed to continuously evaluate the program's goals and outcomes as well as communicate strategic planning and development of the project.

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Appendix A

JSU IRB Approval Letter

JSU | INSTITUTIONAL REVIEW BOARD
JACKSONVILLE STATE UNIVERSITY

Institutional Review Board for the Protection of Human Subjects in Research
203 Angle Hall
700 Pelham Road North
Jacksonville, AL 36265-1602

November 7, 2023

Mwaba Chisela
Jacksonville State University
Jacksonville, AL 36265

Dear Mwaba:

Your protocol for the project titled "Reducing No-Show Rates in an Outpatient GI Endoscopy Lab" protocol number 11072023-05, has been approved by the JSU Institutional Review Board for the Protection of Human Subjects in Research (IRB).

If your research deviates from that listed in the protocol, please notify me immediately. One year from the date of this approval letter, please send me a progress report of your research project.

Best wishes for a successful research project.

Sincerely,

Sarah Donley
Human Protections Administrator, Institutional Review Board

Appendix B

CITI Training

Completion Date 29-Aug-2023
Expiration Date 29-Aug-2026
Record ID 57780559

This is to certify that:

mwaba chisela

Not valid for renewal of certification through CME.

Has completed the following CITI Program course:

Social and Behavioral Responsible Conduct of Research
(Curriculum Group)
Social and Behavioral Responsible Conduct of Research
(Course Learner Group)
1 - RCR
(Stage)

Under requirements set by:

Jacksonville State University

CITI
Collaborative Institutional Training Initiative

101 NE 3rd Avenue, Suite 320
Fort Lauderdale, FL 33301 US
www.citiprogram.org

Verify at www.citiprogram.org/verify/?w4cf868e7-3fbd-4f66-b260-99d5852a379f-57780559