

Evaluation of the satisfaction of the patient undergoing screening colonoscopy and quality of the procedure

Evaluación de la satisfacción del paciente sometido a colonoscopia de escrutinio y la calidad del procedimiento

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Abstract

Background: Screening colonoscopy requires quality parameters to determine its efficacy to detect cancerous or precancerous lesions. Limitations of the procedure are the patient's rejection, difficulty for its preparation, or lack of preparation. **Objective:** The objective of this study was to assess whether the patient satisfaction correlates with the quality of the procedure. **Method:** One hundred consecutive patients for a screening colonoscopy were included, they were randomized to use a preparation with polyethylene glycol or sodium picosulfate (P). In addition, a second parameter evaluated was related to a follow-up phone call performed to half of the patients before the study, during the preparation time. **Results:** P was better tolerated and qualified; however, there was no difference with the quality of preparation, adenomatous polyps detection rate, cecum insertion rate, and patient satisfaction. A difference was found in whom had a follow-up phone call. **Discussion:** A good colon preparation is a key factor to have a quality colonoscopy, and it has been shown important that a good relationship for explain the doubts and follow the preparation. **Conclusion:** It was found that the type of preparation and patient follow-up during the study correlates with the quality of the study and patient satisfaction.

Keywords: Quality colonoscopy. Colorectal cancer. Screening colonoscopy.

Resumen

Antecedentes: La colonoscopia de escrutinio requiere parámetros de calificación para determinar su eficiencia en la detección de lesiones cancerosas o precancerosas. Sus limitantes son su rechazo, la dificultad durante su preparación o la falta de preparación. **Objetivo:** Evaluar la satisfacción del paciente y los criterios de calidad del estudio. **Método:** Se incluyeron 100 pacientes enviados para colonoscopia de escrutinio asignados aleatoriamente a uno de dos grupos de preparación colónica: polietilenglicol (PEG) o picosulfato de sodio (P), para evaluar la satisfacción y la limpieza colónica. Otra evaluación fue por medio de llamada de refuerzo al momento de la preparación. **Resultados:** Con P se tuvieron mejores tolerabilidad y calificaciones de satisfacción, en comparación con PEG. No hubo diferencia para la calidad de la limpieza, la tasa de detección de pólipos adenomatosos ni la intubación cecal. La llamada telefónica de reforzamiento incrementó la satisfacción,

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la limpieza colónica y la tasa de detección de adenomas. **Discusión:** Una relación estrecha con el paciente durante su proceso de limpieza y explicación del procedimiento se ha visto como uno de los factores más importantes para lograr una colonoscopia de alta calidad. **Conclusión:** El tipo de preparación colónica y la intervención durante la preparación se relacionaron con una mejor calidad del estudio y una mayor satisfacción del paciente.

Palabras clave: Calidad en colonoscopia. Cáncer colorrectal. Colonoscopia de escrutinio.

Introduction

Colonoscopy is a diagnostic and therapeutic procedure the use of which has become widespread in our society. Technological advances allow the procedure to be simple, safe, and effective for timely detection and treatment of colorectal lesions.

Screening methods have been reported to reduce mortality associated with colorectal cancer. However, there are differences between the different tests, while the non-immunochemical fecal occult blood test is reported to decrease mortality by 33%, colonoscopy improves this probability to up to 56%¹. Therefore, colonoscopy is currently considered the standard reference method for screening².

A screening colonoscopy is that in which there is no diagnostic or surveillance indication. Probably, in these cases, preparation of the colon is a determining factor for achieving a successful colonoscopy, which is why it has been an aspect of great attention and study. Inadequate preparation determines the probability of overlooking and not diagnosing major lesions, and, therefore, of having to repeat the procedure until better cleansing is achieved. A low adenoma detection rate has been linked to an increased risk of interval colorectal cancer^{3,4}.

A cancer interval has been defined as colorectal cancer that is diagnosed during the surveillance period (before the first examination)⁴.

The qualification to achieve the quality standard in a screening colonoscopy includes evaluating various technical aspects, such as the endoscopy equipment or the use of adaptable accessories³ that allow improving colonic visualization, such as endocuff and endorings⁵ and, on the other hand, the patient satisfaction, for which ease of preparation has been found to be essential. These aspects have been expressed in various guidelines and recommendations^{6,7}.

The purpose of this study was to evaluate the quality of screening colonoscopy procedures in an outpatient clinic with regard to two types of bowel cleansing preparation, the effect of an educational intervention (reinforcement phone call), and the degree of patient satisfaction.

Methods

A prospective, comparative, and cross-sectional study was carried out in a private endoscopy service in Mexico City. After written consent was obtained, 100 consecutive patients aged 50–75 years, of both genders, referred for screening colonoscopy for the first time were included in the study. Those with colonic surgical resection, with a personal history of prevalent colorectal cancer (active or under treatment), data of alarm (lower gastrointestinal bleeding, hematochezia, narrowing of the stool, abdominal mass or unexplained weight loss > 5 kg within previous 3 months), chronic kidney failure, and congestive heart failure or other disease that contraindicated bowel preparation or that interfered with understanding orders or motor skills, in addition to those with known allergies to any of the drugs used before, during and after the procedure, were excluded from the study.

Consumption of antiplatelet drugs, such as aspirin or clopidogrel, was discontinued 7 days before the procedure; those patients in whom discontinuing these medications was not possible or who were taking anticoagulants were not included in the study.

All subjects were provided a detailed explanation about colonoscopy quality guidelines, and clinical-demographic data were collected. At initial evaluation, they were given individualized written and verbal information on bowel cleansing preparation⁸.

The day before the study, all participants were reminded of the appointment and all doubts about bowel preparation were solved by telephone. All participants attended accompanied by a relative and were applied a satisfaction survey immediately before their discharge, and a phone call was made to confirm patient status 8 h after the procedure.

Patients were randomly assigned to receive either polyethylene glycol (PEG) or sodium picosulfate (P) for bowel preparation. In both cases, the preparation was at the conventional fractional dose.

The day before, patients were on a diet of abundant clear fluids and had to fast on the day of the study. Randomly, half the subjects from each group received

a reinforcement phone call (educational intervention) to solve doubts about preparation and tolerability.

A four-point Likert questionnaire to assess satisfaction and tolerability was applied both to the patient and the physician who performed the procedure, which has been described in a previously conducted study⁹. In summary, a questionnaire was applied (Fig. 1) at the patient admission to the endoscopy unit, which included questions about tolerability, whether he/she experienced symptoms and the ability to ingest the laxative, as well as his/her satisfaction or subjective assessment of the quality of care on the preparation and the endoscopic procedure that was performed.

Baseline measurements were carried out, as well as during and after the procedure, which included vital signs (blood pressure, heart rate, respiratory rate, temperature, and oxygen saturation). The colonoscopy was performed by one of four endoscopists with more than 10 years of experience in colonoscopy procedures. Intravenous propofol sedation was provided by an anesthesiologist according to patient requirements, with oxygen being supplied through nasal prongs at 3 L/min.

In all cases, air was insufflated in the colonoscopy, reaching the cecum was attempted, and colonoscope withdrawal time was determined in > 6 min. In case, a polyp was found during the examination, its location and size were recorded, and it was resected with loop polypectomy technique or with endoscopic mucosal resection. The specimen was sent for histopathologic evaluation.

The degree of cleanness was assessed using the American Society of Gastrointestinal Endoscopy (ASGE) and American Gastroenterological Association (AGA)⁴ Joint Force endoscopy quality guidelines and was rated as 1 (excellent), 2 (good), 3 (regular), or 4 (bad).

Of the measured variables, the main outcome variable was the quality of bowel preparation (ASGE and AGA four-point scale). The other variables were age, gender, smoking, alcoholism, health perception (dichotomous variable: good or bad), and perception of risk for colorectal cancer (dichotomous variable: fear or no fear).

As a quality control measure, adenoma detection rate was evaluated, defined as the proportion of screening colonoscopies carried out by a physician to detect at least one colorectal adenoma or histologically-confirmed adenocarcinoma².

Finally, the degree of patient satisfaction with the type of preparation and follow-up by the medical and paramedical staff was evaluated.

Colonoscopy satisfaction survey
Please help us improve our service by answering the following questions:

Name or initials: _____ Date: _____
Age: _____ Sex: M () F ()

1. - Is this the first time you undergo this procedure? Yes _____ No _____
If your answer was NO, how many times have you undergone this procedure before?
_____ what type of preparation did you use on previous occasions? _____

2. - How do you consider the preparation you took for the colonoscopy?
() Without complication, it was simple and easy to follow
() I had no problems but I think it should be simpler
() I had trouble following the instructions and I still have some doubts
() I could not understand how it should be done and someone had to help me

3. - Would you prefer to prepare differently if another colonoscopy is required?
() Yes Why? _____
() No

4. - Would you take this preparation again if you had to repeat the cleansing procedure?
() Yes
() No Why? _____

5. - How would you rate the taste of the preparation?
() Pleasant
() Tolerable
() Unpleasant but bearable
() I would never take it again

6. - Did you manage to take all the preparation? All _____ No _____, I left _____ mL.

7. - How many bowel movements did you have when you took this preparation?
From 1 to 5 _____ From 6 to 10 _____ From 11 to 15 _____ More than 16 _____

8. Did you have any symptoms caused by the preparation? How severe was discomfort?

	😊	😐	😞	😫	😩
() Nausea					
() Vomiting					
() Abdominal pain					
() Bad taste in mouth					
() Dizziness					
() Headache					
() Major weakness					
() Other					

😊 I think I had some discomfort but didn't attach any importance to it.

😐 I was fine. If I had any discomfort, I didn't notice it.

😞 There were times when discomfort was important, but I did not stop taking care my activities.

😫 Wasn't able to take care of my activities due to the discomfort. I felt unwell.

😩 I will never take this preparation again. I felt awful.

Endoscopist physician registration sheet:

The study was completed: Yes _____ No _____
Study duration: _____ minutes
Bowel cleansing was:
() Excellent
() Good
() Regular
() Bad

Rating: **Excellent** (no problems and complete), **Good** (with abundant fluid material), **Regular** (solid material that obstructs visualization of some parts), **Bad** (abundant solid material that impedes the procedure)

Figure 1. Questionnaire on bowel preparation satisfaction and tolerability.

On statistical analysis, clinical-demographic data were descriptively presented. The Chi-square test and Student's t-test were used for categorical and quantitative variables, respectively. A binary logistic regression study was carried out for the degree of preparation between poor and regular versus good and excellent. A binary logistic regression analysis was used for adenoma detection rate. Every p-value < 0.05 on the analysis was considered to be statistically significant.

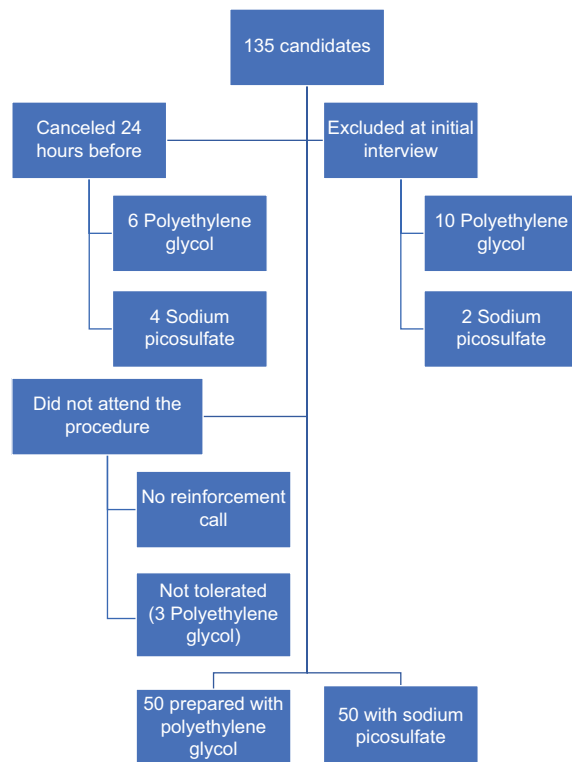


Figure 2. Recruitment diagram.

Results

One hundred and thirty-five patients were interviewed over a 7-month period. Out of them, 12 decided not to undergo the procedure at initial survey. After randomization, 23 subjects withdrew their informed consent and were not included in the study (Fig. 2).

The colonoscopy was not performed due to cancellation of the procedure during the confirmation call on previous day in ten cases (6 PEG and 4 P), in seven due to intolerance to the drug (4 PEG and 3 P) and in six cases for not attending the appointment (in these cases there was no reinforcement call).

In the final analysis group of 100 subjects who underwent colonoscopy, mean age was 57 ± 11 years, and 65% were male. Distribution of the groups and their characteristics is shown in table 1. No between-group differences were found.

Four percent were alcohol drinkers and 30% were occasional smokers. The most common comorbidity was high blood pressure (35%), followed by type 2 diabetes mellitus (28%) and acid peptic disease (15%). The use of non-steroidal anti-inflammatory drugs was 8%, and of aspirin 30%. There were no statistically significant differences between the groups.

Table 1. The patient demographic characteristics

Variables	Total	Polyethylene glycol	Sodium picosulfate	p
Age	57 + 18 65/35	58 + 13 31/19	56 + 19 34/16	NS NS
Gender (M/F)	35	17	18	NS
Type 2 diabetes mellitus	28	16	12	NS
Acid peptic disease	15	8	7	NS
Aspirin consumption	30	16	14	NS

NS: non-significant.

In 15% of the female population, there was a history of hysterectomy due to myomatosis or vaginal hemorrhage (Table 1).

Bowel preparation rating by type of laxative and patient satisfaction

In 95% of cases, cecum intubation was achieved, and in 94%, passing the ileocecal valve and carefully examining the terminal ileum was possible. Insertion times (6.4 min with P vs. 7.18 min with PEG) and colonoscope withdrawal (23.06 min with P vs. 23.10 min with PEG) were similar in both groups.

Bowel cleansing quality was satisfactory in 95% and unsatisfactory in five cases (three with P and two with PEG) who did not receive a reinforcement phone call the day before the intervention. With reinforcement call, average colonoscope withdrawal time could be reduced by 1 min.

Endoscopist rating showed a variation from excellent to good preparation in 88% in both groups; however, there were differences in those patients who received the reinforcement call in both groups. The cases with bad or regular preparation occurred in those who did not receive a reinforcement call, which reached 32% in the PEG group versus 0%, and 24% in the P group versus 0% (Table 2).

Quality of preparation was better rated by those patients who took P, but this did not show a significant difference between the groups with regard to cleansing, cecum intubation, or polyp detection parameters ($p = 0.33$) (Table 3).

The educational intervention allowed having closer contact with the patient and explaining the preparation verbally and in writing. On the other hand, the reinforcement phone call significantly influenced the quality of colonoscopy. The polyp detection rate increased from 28 to 47% with said intervention and lesions < 5 mm in diameter were detected (Table 4).

Table 2. Quality of preparation according to the endoscopist

	Sodium picosulfate		Polyethylene glycol		p
	Total (n)	With reinforcement	Total	With reinforcement	
5	5	5	7	8	0.33
39	39	20	35	18	
5	5	0	6	0	
Excellent	1	0	2	0	
50	50	25	50	25	

Table 3. Patient satisfaction: ease of preparation and taste

Rating	Sodium picosulfate		Polyethylene glycol		p
	Total	With reinforcement	Total	With reinforcement	
	19	12	13	6	0.18
	27	17	24	15	
1	4	1	11	4	
	2	1	0	0	
2	50	31	50	25	

Discussion

The current guidelines and consensuses recommend that colonoscopy is the standard reference method for the detection of colorectal lesions in subjects with average risk. There is evidence that, in asymptomatic subjects, detection and removal of precursor lesions (adenomas) by colonoscopy can reduce the incidence and reduce cancer-associated mortality^{7,10,11}.

According to the European guidelines on quality control in the screening and diagnosis of colorectal cancer⁶, bowel preparation quality is an auditable aspect in colonoscopy and is a cornerstone for evaluation of the procedure. Ideal preparation should meet several characteristics, among which the main ones are that it should be able to expel all feces without having an effect on colonic macroscopic appearance.

There are reports in the literature on the effects of bowel colon preparation. At present, it is considered the most important factor for colonoscopy efficacy and quality; poor preparation increases the time for its performance and, in particular, leads to a low adenoma detection rate⁷. In addition, it increases the costs of the procedure and entails

loss of time, increased risks (increased interval colorectal cancer), and need to repeat the procedure⁸.

Rating of the quality standards when performing a screening colonoscopy includes an evaluation of technical aspects, such as experience of the physician, the endoscopy equipment, the type of light, and the use of accessories to improve the vision of colonic mucosa, such as the covers called endocuff and endorings, and on the other hand, there is patient satisfaction, since ease of preparation is essential for his/her acceptance and cooperation^{3,5}.

There are other aspects that have been suggested as quality rating parameters, including pre-procedure measurements (indications and adequate interval for screening), cecal intubation rate, colonoscopy withdrawal time, adenoma detection rate, adherence to guidelines, patient satisfaction, and bowel cleansing^{1,10,12}.

Bowel preparation is an essential part, and its evaluation and analysis have therefore been reviewed by many authors and are emphasized in recommendation guidelines. Regardless of the preparation option, it is important to remember that the dosage should be divided⁸ in order to improve its effectiveness, safety, and tolerability, and to reduce the number of adverse events, as well as costs. Therefore, health personnel should be familiar with the product to be able to clearly explain it to patients¹³.

If the preparation is not well tolerated, even if it is not efficacious, it will not be ingested and will be much less effective. The purpose of dividing or fractioning the dose has beneficial effects that directly influence on mucosal cleanness and tolerability. The three criteria for adequate intestinal preparation are interrelated: efficacy, safety, and tolerability¹⁴.

Inadequate preparation is predictable to a significant degree (Table 3). There are two sets of predictors, one that involves medical factors and the other is related to issues such as socioeconomic status, level of education, type of insurance, and health literacy¹⁵.

Verbal, written explanations, through a video or through an APP have been part of the various strategies¹⁵. In our case, we used verbal and written explanation, as well as reminders by means of a reinforcement phone call, and the variant used was to make an additional call at the time of preparation. This single strategy helped to improve both patient satisfaction and rating of the procedure quality.

Between 20 and 40% of bowel cleansing preparations have been reported to continue to be inadequate¹⁶. The divided dose and dosing on the same day are more effective than the take the night before^{17,18}. The divided dose is better tolerated than the night before dosing¹⁸.

Table 4. Patients with adenomatous polyps and quality of bowel cleansing

	Patients with adenomas	With reinforcement	Cancer or > 2 cm polyp	5-15 mm polyp	< 5 mm polyps
Sodium picosulfate	22	13	2	10	10
Polyethylene glycol	25	15	1	10	14

Two types of preparations were used to assess safety, effectiveness, and tolerability: P and PEG. The amount of solution and taste of PEG is factors that cause some resistance by candidates, even at the time of the interview; however, the safety and effectiveness goals were achieved. Some obstacles can be avoided by an appropriate and individualized explanation to the patient. Even with preparation with P, which is simpler and better tasting, there were obstacles during its implementation that decreased part of the rating of the preparation.

Conclusion

Close follow-up of the patient who requires a screening colonoscopy, from the explanation of the preparation to the search for a methodology for follow-up, is an important aspect for obtaining a quality colonoscopy. New alternatives should be sought for a preparation that is simpler in its execution and with better taste.

Conflicts of interest

The authors declare that there are no conflicts of interest.

Ethical disclosures

Protection of human and animal subjects. The authors declare that the procedures that were followed adhered to the ethical standards of the responsible committee for experimentation on human beings and were in agreement with the World Medical Association and the Declaration of Helsinki.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained informed consent from the patients and/or subjects referred to in the article. This document is in the possession of the corresponding author.

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