

Health Care Providers' Acceptance of Unsedated Colonoscopy Before and After a State-of-the-art Lecture on the Feasibility of the Option

Felix W. Leung^{1,2}, Abdulrahman Aljebreen³

¹The Research and Medical Services, Sepulveda Ambulatory Care Center, VA Greater Los Angeles Healthcare System and ²David Geffen School of Medicine at UCLA, Los Angeles, CA, ³King Khalid University Hospital, KSU, Internal Medicine, King Khalid University Hospital, Riyadh, Saudi Arabia

Address for correspondence:
Prof. Felix W. Leung,
111G, Sepulveda Ambulatory Care Center, VAGLAHS, 16111 Plummer Street, North Hills, CA 91343.
E-mail: felixleung@socal.rr.com

ABSTRACT

Background/Aim: The impact of education on acceptance of unsedated colonoscopy by health care providers is unknown. To test the hypothesis that knowledge imparted by a lecture on unsedated colonoscopy is associated with its enhanced acceptance. **Settings and Design:** At the State-of-the-Art Lecture on "Unsedated colonoscopy: Is it feasible?" presented at the 8th Pan-Arab Conference on Gastroenterology, February, 2011, Riyadh, Saudi Arabia, a questionnaire survey of the audience was undertaken. **Materials and Methods:** An expectation questionnaire was administered before and after the lecture. Attendees responded anonymously. Statistical analysis used: The responses of a convenient sample of 49 attendees who provided completed responses to the questionnaire both before and after the lecture were analyzed. Data are expressed as frequency counts and means±SEM. Repeated measures analysis of variance (ANOVA), ANOVA with contrasts and Chi-square analysis (Statview II Program for Macintosh computers) were used to assess the data. A *P* value of <0.05 is considered significant. **Results and Conclusions:** The mean±SEM credibility score (maximum possible score=50) was 25.8 ± 1.8 before and 33.3 ± 2.1 after the lecture, with a significant improvement in mean score of 7.5 ± 1.3 (*P*=0.001, paired *t* test). Nineteen (39%) respondents were not willing to consider unsedated colonoscopy for themselves before the lecture. This number decreased to 13 (27%) after the lecture. Before the lecture only 4 (8%) respondents were willing to consider unsedated colonoscopy for themselves. After the lecture this number increased to 8 (16%). The data suggest education of healthcare professionals regarding the feasibility of unsedated colonoscopy appears to enhance its acceptance as a credible patient care option at a Pan-Arab Gastroenterology Conference.

Key Words: Acceptance, health care providers, unsedated colonoscopy

Received: 08.06.2011, Accepted: 22.10.2011

How to cite this article: Leung FW, Aljebreen A. Health care providers' acceptance of unsedated colonoscopy before and after a state-of-the-art lecture on the feasibility of the option. Saudi J Gastroenterol 2012;18:50-4.

Although unsedated colonoscopy has been described in the Kingdom of Saudi Arabia (KSA),^[1] a trend toward increased use of sedation emerged in recent years.^[2] The impact of unsedated colonoscopy education on its acceptance has not been assessed. In this report we provide evidence to support the hypothesis that knowledge of the feasibility of unsedated colonoscopy imparted by lecture presentation is associated with its increased acceptance as a credible option of patient care.

MATERIALS AND METHODS

State-of-the-art lecture

At the 8th Pan-Arab Gastroenterology Conference the following State-of-the-Art Lecture "Unsedated colonoscopy: Is it feasible?" was presented by one of the authors.^[3] The salient features of the lecture are summarized here. Colonoscopy was developed as an unsedated procedure. Discomfort led to the use of sedation which has become standard practice including in screening cases in the USA. To counter its negative image, supporters proposed sedation-free, medication-free, sedationless, and sedation risk-free (SRF), to characterize unsedated colonoscopy. A recent review confirms that SRF colonoscopy continues to be practiced worldwide. Sedation is a barrier (need for escort and time off after sedation) to colonoscopy screening. After colonoscopy the median time to return to normal is 18 h. Sedation-related complications occurring in 1.3% of

Access this article online	
Quick Response Code: 	Website: www.saudijgastro.com
	DOI: 10.4103/1319-3767.91736

patients—hypoxia (0.75%), hypotension and bradycardia (0.49%) may not be justifiable in a healthy screening individual.

The various options of colonoscopy with or without routine sedation include scheduled and unscheduled ones. The only unscheduled option is unsedated when patients present after completing bowel preparation but without an escort (1–2% of patients in the USA). The scheduled options range from deep sedation, conscious sedation to unsedated. Deep sedation increases productivity but is more expensive. Conscious sedation can be divided into traditional, minimal sedation, as needed and on demand sedation. As needed sedation carries a risk of coercion, patients are often told to bear the discomfort a little longer because the cecum is almost reached. On demand sedation is decided by the patients. It is possibly less coercive. When it is explained, that without sedation, there is no risk of sedation medication-related complications, no escort requirement, no need for time spent in recovery, and no activity restrictions after the examination and the colonoscopist will employ maneuvers to decrease discomfort, about one-third of the patients chose the SRF option. The main reasons were that they could communicate and there was no escort requirement.

Overall, the average cecal intubation rate with unsedated colonoscopy using traditional air insufflation is ~80%. Insufflated air lengthens the colon and exaggerates angulations at all the flexures and redundant segments. A modern method which includes turning the air pump off to avoid colon elongation, removal of residual air by suction to minimize angulations, water infusion to identify the lumen and water exchange to clear the view, has been shown to offer important benefits. When the traditional air method was used, the cecal intubation rate was only 76%; the main limiting factor was patient discomfort. When we switched to the water method, the cecal intubation rate was significantly increased to 97%. Willingness to repeat unsedated colonoscopy in the future significantly improved from 69% to 90%. The proportion of patients with significant pain during insertion decreased from 12% to 1.6%. Likely because of cleansing of the water exchange, the proportion of patients with poor bowel preparation during withdrawal decreased from 12% to 1.6%. Two subsequent randomized control trials (RCTs) showed the water method decreased pain during and after unsedated colonoscopy, increased the proportion of patients who could complete unsedated colonoscopy when the option of on demand was used, and decreased patient recovery time burdens. A favorable impact on adenoma detection rate (ADR) has also been demonstrated.

The lecture concluded that unsedated colonoscopy is feasible. It may provide profound benefits, especially when

it is integrated into the various options to minimize patient burden in screening. The feasibility is enhanced by the water method and the water method may have additional benefits.

Questionnaire survey before and after the lecture

To assess the educational impact, before and after the lecture participants were asked to provide anonymous responses to an expectation questionnaire [Appendix] regarding whether unsedated colonoscopy was a credible patient care option. The questionnaire was adapted from a published expectation questionnaire.^[4] Respondents identified themselves only as administrators, nurses, senior physicians, medical students, or trainees. They were free to choose to complete the questionnaire or not. No record was kept of those who did not respond. Responses to each question was scored on a 10-point linear analog scale (1 = not; 10 = logical, confident, willing to consider).

Data analysis

Credibility score is the sum of these 5 individual scores. Review of questionnaire data for presentation was approved by the Veterans Affairs Greater Los Angeles Healthcare System (VAGLAHS) Institutional Review Board. Data are expressed as frequency counts and means \pm SEM. Repeated measures analysis of variance (ANOVA), ANOVA with contrasts and χ^2 analyses (Statview II Program for Macintosh computers) are used to assess the data. A *P* value of <0.05 is considered significant.

RESULTS

Forty-nine respondents (2 medical administrators, 19 senior physicians, 17 nurses, 10 medical trainees, and 1 medical student) provided answers to the expectation questionnaire both before and after the lecture. There were no significant differences among the groups in terms of the scores for each question or total pre- or postlectures total scores and so the entire cohort was analyzed as a single group. The mean credibility score (maximum possible score = 50) was 25.8 ± 1.9 before and 33.3 ± 2.1 after the lecture, respectively, with a significant improvement of 7.5 ± 1.3 ($P < 0.05$, paired *t* test) [Table 1]. Nineteen (39%) respondents were not willing to consider unsedated colonoscopy for themselves before the lecture. This number decreased to 13 (27%) after the lecture. Before the lecture only 4 (8%) respondents were willing to consider unsedated colonoscopy for themselves. After the lecture this number increased to 8 (16%). These changes were not statistically significant [Table 2].

DISCUSSION

This is the first report describing the impact of educational lecture on expectations of health care providers about unsedated colonoscopy in KSA. We found that a lecture on

Table 1: Pre- and postdiscussion credibility scores based on expectation questionnaire

Number of respondents = 49	Prescore	Postscore	Difference
1. How logical does unsedated colonoscopy seem to you?	5.2 ± 0.4	6.8 ± 0.4 ^[1]	1.6 ± 0.4
2. Are you confident that unsedated colonoscopy has a role in patient care?	5.8 ± 0.4	7.1 ± 0.4 ^[1]	1.3 ± 0.4
3. Are you confident in recommending unsedated colonoscopy to patients?	4.9 ± 0.4	6.8 ± 0.4 ^[1]	1.8 ± 0.4
4. Are you willing to consider unsedated colonoscopy for your patients?	5.5 ± 0.5	6.9 ± 0.5 ^[1]	1.4 ± 0.3
5. Are you willing to consider unsedated colonoscopy for yourself?	4.4 ± 0.5	5.8 ± 0.5 ^[1]	1.4 ± 0.3
Credibility score (total, maximum = 50)	25.8 ± 1.9	33.3 ± 2.1 ^[1]	7.5 ± 1.3

*Adapted from Borkovec *et al.*^[4] Mean±SE.^[1] Versus prescore, *P*<0.05, paired *t* test

Table 2: Pattern of pre- and postdiscussion responses to the question: Are you willing to consider unsedated colonoscopy for yourself?

	Prediscussion (%)	Postdiscussion (%)	<i>P</i> (χ^2 analysis)
No (score = 1)	19 of 49 (39)	13 of 49 (27)	n.s.
Yes (score = 10)	4 of 49 (8)	8 of 49 (16)	n.s.

n.s.: Not significant

the feasibility of scheduled unsedated colonoscopy enhanced acceptance of the option of unsedated colonoscopy in some health care providers attending a Pan-Arab Gastroenterology Conference.

Several US questionnaire studies explored the subject of predictors of acceptance of unsedated colonoscopy.^[5-7] Male gender,^[5,6] increasing age,^[6] absence of abdominal pain,^[6] having a college,^[5] graduate,^[7] or professional educational^[7] degree, low anxiety based on pre-procedure anxiety scales,^[5] and lower doses of sedative drugs used during colonoscopy^[5] were predictors of willingness to undergo^[5] or try^[6] colonoscopy without sedation. An in-hospital survey of a convenience sample of physicians (nonendoscopists), gastroenterology, and nongastroenterology nurses indicated 2.2%, 19.6%, and 0%, respectively were willing to undergo unsedated colonoscopy.^[8] The nurses with the most knowledge were the most willing. An e-mail-based survey [with responses from 18% (724) of American Society for Gastrointestinal Endoscopy (ASGE) national members contacted] of endoscopists showed 55% routinely offered and 30% would undergo unsedated colonoscopy,^[9] a percentage even higher than that among gastroenterology nurses.^[8] In a survey study

434 patients completed questionnaires before and after their sedated colonoscopy assessing their willingness to undergo unsedated colonoscopy.^[5] Patients were routinely given sedation unless they specifically requested that they be unsedated (10 patients). Only 16.9% were willing to undergo unsedated colonoscopy on their pre-procedure questionnaire. Willingness increased on the post-procedure questionnaire to 22.6% (*P*=0.01).^[5] Our findings that before the lecture only 4 (8%) respondents were willing to consider unsedated colonoscopy for themselves, and after the lecture this number increased to 8 (16%), are comparable. In contrast in about 50% of European Society of Gastrointestinal Endoscopy (ESGE)-related countries, less than 25% of patients are sedated for routine diagnostic upper gastrointestinal endoscopy (ESGE survey).^[10]

A detailed explanation of the pros and cons of sedated and unsedated colonoscopy led one-third of the patients to select the unsedated option in one report.^[11] First-hand experience with unsedated colonoscopy performed with the less painful water method had an even greater impact. In an uncontrolled, nonrandomized, consecutive group study in scheduled unsedated patients,^[12] when the traditional air method was used, willingness to repeat unsedated colonoscopy in the future significantly improved from 69% (air method) to 90% (water method). The data of an RCT of scheduled unsedated patients^[13] showed that willingness to repeat unsedated colonoscopy (78% vs 93%) was significantly higher in the water group.

Taken together, these reports suggest knowledge and experience with unsedated colonoscopy (especially if it is successful) are linked to its acceptance. The main limitations of the current survey study include unblinded and uncontrolled design. These observations, however, provide insight into the less publicized option of unsedated colonoscopy. The hypothesis that education of the health care providers, who in turn will provide explanation of the option to patients may result in enhanced acceptance of unsedated colonoscopy deserves to be tested.

Other limitations of the study include the small number of study subjects and data in individual subgroups were not presented separately. A clear bias is apparent because the speaker who gave the lecture is the author of many papers on unsedated colonoscopy, and the benefits of sedated colonoscopy was not well presented in the lecture, especially it is well known that sedated colonoscopy is superior in terms of patient and physician satisfaction and has a better completion rate. The subjects in the audience were either health care providers or professionals. It would have been better if the audience were the general public. Thus, the data primarily reflect pilot findings; and applicability to larger number of physicians and patients remains to be determined.

Moreover, as unsedated colonoscopy is not the standard practice in the west and also to a large extent in other parts of the world as well, to convince the general public and to change practice RCT involving large number of patients are required. The patients' comfort score will determine if it is possible to convince the general public that unsedated colonoscopy is acceptable.

The rising incidence of colorectal cancer in KAS^[14] has prompted calls for making the population aware of the possible relation between diet and colorectal cancer and improving food supply policy and screening for colorectal cancer. Before embarking on colonoscopy-based colon cancer screening program, consideration of the optimal strategy in terms of use of sedation or not, employment of methods to minimize patient burden are relevant to its long-term cost and effectiveness. The use of unsedated colonoscopy,^[1,15] adopted as a think outside the box approach,^[16] assisted by the water method,^[17,18] will likely provide a less burdensome

approach for the patients. The hypothesis that such an approach, by minimizing patient burden will enhance participation in screening, eliminate missed, or undiagnosed lesions, cut down on postscreening colonoscopy interval cancers, and attenuate colon cancer mortality, deserves to be tested in future studies.

ABBREVIATIONS

ACC: Ambulatory Care Center; ADR: Adenoma detection rate; ANOVA: Analysis of variance; KSA: Kingdom of Saudi Arabia; SEM: Standard error of mean; VA: Veterans Affairs; GLAHS: Greater Los Angeles Healthcare System.

ACKNOWLEDGMENT

Supported in part by 2009 ACG Clinical Research Award, 1985 ASGE Career Development Award, and Veterans Affairs Greater Los Angeles Healthcare System medical research funds.

APPENDIX: THE QUESTIONNAIRE

Effect of Education on Audiences' Expectation About Unsedated Colonoscopy

Please check an appropriate category that applies to you:

Administrator _____, Senior Physician _____, Trainee _____, Nurse _____, Student _____, Other _____

I. Questionnaire before the lecture

- How logical does unsedated colonoscopy seem to you?
(Please circle a number, 1 = not logical; 10 = logical)
1 2 3 4 5 6 7 8 9 10
- Are you confident that unsedated colonoscopy has a role in patient care?
(Please circle a number, 1 = not confident; 10 = confident)
1 2 3 4 5 6 7 8 9 10
- Are you confident in recommending unsedated colonoscopy to patients?
(Please circle a number, 1 = not confident; 10 = confident)
1 2 3 4 5 6 7 8 9 10
- Are you willing to consider unsedated colonoscopy for your patients?
(Please circle a number, 1 = not willing; 10 = willing)
1 2 3 4 5 6 7 8 9 10
- Are you willing to consider unsedated colonoscopy for yourself?
(Please circle a number, where 1 = not willing; 10 = willing)
1 2 3 4 5 6 7 8 9 10

II. Questionnaire after the lecture

- How logical does unsedated colonoscopy seem to you?
(Please circle a number, 1 = not logical; 10 = logical)
1 2 3 4 5 6 7 8 9 10
- Are you confident that unsedated colonoscopy has a role in patient care?
(Please circle a number, 1 = not confident; 10 = confident)
1 2 3 4 5 6 7 8 9 10
- Are you confident in recommending unsedated colonoscopy to patients?
(Please circle a number, 1 = not confident; 10 = confident)
1 2 3 4 5 6 7 8 9 10
- Are you willing to consider unsedated colonoscopy for your patients?
(Please circle a number, 1 = not willing; 10 = willing)
1 2 3 4 5 6 7 8 9 10
- Are you willing to consider unsedated colonoscopy for yourself?
(Please circle a number, where 1 = not willing; 10 = willing)
1 2 3 4 5 6 7 8 9 10

REFERENCES

1. Aljebreen AM. The completeness rate of colonoscopy in a cohort of unsedated patients. *Saudi J Gastroenterol* 2004;10:150-4.
2. Sheta SA. Procedural sedation analgesia. *Saudi J Anesth* 2010;4:11-6.
3. Leung FW, Aljebreen AM. New Horizon – Unsedated colonoscopy: Is it feasible? *Saudi J Gastroenterol* 2011;17:287-90.
4. Borkovec TD, Nau SD. Credibility of analogue therapy rationales. *J Behav Ther Exp Psychiatry* 1972;3:257-60.
5. Early DS, Saifuddin T, Johnson JC, King PD, Marshall JB. Patient attitudes toward undergoing colonoscopy without sedation. *Am J Gastroenterol* 1999;94:1862-5.
6. Rex DK, Imperiale TF, Portish V. Patients willing to try colonoscopy without sedation: Associated clinical factors and results of a randomized controlled trial. *Gastrointest Endosc* 1999;49:554-9.
7. Subramanian S, Liangpunsakul S, Rex D. Preprocedure patient values regarding sedation for colonoscopy. *J Clin Gastroenterol* 2005;39:516-9.
8. Madan A, Minocha A. Who is willing to undergo endoscopy without sedation: Patients, nurses, or the physicians? *South Med J* 2004;97:800-5.
9. Faulx AL, Vela S, Das A, Cooper G, Sivak MV, Isenberg G, *et al.* The changing landscape of practice patterns regarding unsedated endoscopy and propofol use: A national Web survey. *Gastrointest Endosc* 2005;62:9-15.
10. Ladas SD, Aabakken L, Rey JF, Nowak A, Zakaria S, Adamonis K, *et al.*; European Society of Gastrointestinal Endoscopy Survey of National Endoscopy Society Members. Use of sedation for routine diagnostic upper gastrointestinal endoscopy: A European Society of Gastrointestinal Endoscopy Survey of National Endoscopy Society Members. *Digestion* 2006;74:69-77.
11. Leung FW. Promoting informed choice of unsedated colonoscopy - patient-centered care for a subgroup of U.S. veterans. *Dig Dis Sci* 2008;53:2955-9.
12. Leung FW, Aharonian HS, Leung JW, Guth PH, Jackson G. Impact of a novel water method on scheduled unsedated colonoscopy in U.S. veterans. *Gastrointest Endosc* 2009;69:546-50.
13. Leung FW, Harker JO, Jackson G, Okamoto KE, Behbahani OM, Jamgotchian NJ, *et al.* A proof-of-principle, prospective, randomized controlled trial (RCT) demonstrating improved outcomes in scheduled unsedated colonoscopy by the water method. *Gastrointest Endosc* 2010;72:693-700.
14. Ibrahim EM, Zeeneldin AA, El-Khodary TR, Al-Gahmi AM, Bin Sadiq BM. Past, present and future of colorectal cancer in the Kingdom of Saudi Arabia. *Saudi J Gastroenterol* 2008;14:178-82.
15. Leung FW, Aljebreen AM, Brocchi E, Chang EB, Liao WC, Mizukami T, *et al.* Sedation risk-free colonoscopy for minimizing the burden of colorectal cancer screening. *World J Gastrointest Endosc* 2010;2:81-9.
16. Leung FW. Thinking outside the box – the case of unsedated screening colonoscopy in the U.S. *Gastrointest Endosc* 2009;69:1354-6.
17. Leung FW. Is there a place for sedationless colonoscopy? *J Interv Gastroenterol* 2011;1:19-22.
18. Leung FW, Leung JW, Mann SK, Friedland S, Ramirez FC. Innovation Forum - The water method significantly enhances the outcome of colonoscopy in sedated and unsedated patient. *Endoscopy* 2011;43:816-21.