European Journal of Molecular & Clinical Medicine
ISSN 2515-8260 Volume 07, Issue 11, 2020

Overview on Colonoscopy in Al-Diwaniyah Gastroenterology center, Iraq

Osamah Tahir Muslim

Department of Internal Medicine, College of Medicine, University Al-Qadisiyah, Iraq
osamahmuslim@gmail.com

ABSTRACT
Background: Colonoscopy is a necessary and widely usedprocedure that has vital role in early detection of colonic and rectal carcinoma and is an essential test in the diagnosis of many diseases of the lower gastrointestinal tract. Colonoscopy is still the investigation of choice for visualizing colonic and rectal mucosa for diseases such as carcinoma, adenoma, and inflammatory conditions.
Objectives: Is to make quality assessment of colonoscopy procedures conducted at Al-Diwaniyah Gastroenterology Center and compare the results with the international figures.
Patients and Method:This is a retrospective observational study conducted at Al-Diwaniyah Gastroenterology Center involved patients underwent colonoscopy for the period of one year, from February 2018 till January 2019. The number of Patients included are 303, (153 males and 150 females) ranging in age from 3 to 85 years underwent colonoscopy for different indications and the results analyzed regarding the level of colonic intubation, quality of colonic preparation and the related factors.
Results:In 96 patients(22.77%)the procedure was limited to the splenic flexure and only the Rectum& Left colon intubated; in 50 patients(16.50%) the procedure terminated at Hepatic Flexure; Cecal intubationachieved in 157 patients representing (51.81%) of the examined patients; and Terminal Ilium intubation was done in 93 patients (30.69%);Only 30 patients (9.90%) found to be perfectly prepared, 103 (33.99%) had poor preparation and the majority (17o patients representing 56.11%) had acceptable level of preparation;those in which cecal intubation not done include: those who have no indications for complete intubation (86 patients 58.90%); poorly prepeared patients (45patients 30.82%); Irritable not well sedated patients (9 patients 6.16%) and finally those who had technical problem prohibiting cecal intubation such as bowel stricture or obstructive mass lesion (6 patients 4.12%).
Conclusions: Colonoscopy at al-Diwaniyah Gastroenterology center is providing a valuable & a good quality service to the province population, yet the competence of the endoscopy staff measured by cecal andIlial intubation ratesis still below the international figures and it needs to be improved by providing the center by a highly qualified personnel and equipment.
Keywords: Colonoscopy, Colorectal Carcinoma, Bowel preparation.

1. INTRODUCTION

Colonoscopy means endoscopic examination of the Rectum, Colon and Terminal Ilium.Colonoscopy is a necessary and widely used procedure that has vital role in early detection of colonic and rectal carcinoma and is an essential test in the diagnosis of many diseases of the lower gastrointestinal tract. Colonoscopy is still the investigation of choice for visualizing colonic and rectal mucosa for diseases such as carcinoma, adenoma, and inflammatory conditions.It still preferable, in a lot of conditions, to other radiologic

procedures such as Spiral CT, virtual colonoscopy or contrast enema because it provides the capacity for tissue sampling and intervention toremove the encountered pathology.

Since it was first introduced in 1969, colonoscopy has been considered as an effective screening tool for the early detection of colorectal carcinoma (CRC). Also, it has a crucial role in the prevention of CRC through the detection and endoscopic resection of adenomatous polyps (precursor lesions of CRC) [1-3].

colonoscopes are longer and have wider diameters than gastro scopes, especially in adult-colonoscopes, which are used in cases of difficult cecal intubation due to extensive narrowing and/or bending of the colonic lumen [4,5].Colonoscopy requires advanced hand skills obtained by high quality training. Technical competence can be judged by practical aspects, such as ease and accomplishment of intubation, minimal pain and discomfort to the patient during colonoscopy[6]. According to many studies in a variety of well recognized international societies, competence in the colonoscopic procedure is acquired by doing at least 30-200 colonoscopic procedures[6-9].An acceptable state of colonicpreparation is essential for performing efficient colonoscopy.

Cardinalparametersof quality assurance in colonoscopy likethe rates of intubating the cecum and detecting adenomas are superior in those whoperformed fair colonic preparation[10]. Moreover, the rate of detection of proximal colonic flat lesions is higher in adequately prepared casesin comparison to badly prepared patients[11]. Around one fifth of colonoscopies are considered to beimperfectly prepared[12]. Recently we have witnessed the advent ofmore acceptable bowel cleansers to the market. Products have developed fromhypertonic salineHigh -volume (from7 to 12 L) preparations topolyethylene glycol (PEG) and electrolytes osmotically balanced preparations. The advent of split-dose colonic cleansing protocols, where the patient takes one half the solutionone day before the examination and the other half on the day of the procedure, dramatically improved the achievement of excellent preparation in 85% in comparison to63% with one -dose regimen[13]. Split-dose protocols increased Adenoma Detection Ratesand flat lesions detection[14].colonoscopy qualityassurance of is crucial to securehigh standardprocedure as well as patient safety and comfort. A group of major parameters of competence are utilized to estimate the performance level of colonoscopy, the most widely used is adenoma detection rate. It needs histological confirmation of adenoma and is consequentlyneeds time to get the result. Adenoma detection rate is simpler to apply and can be a useful indicator of efficient preparation[15].

Wellrecognized unwanted events in colonoscopy are colonic perforation and bleeding, in addition to the risk regarding sedative drug use and anesthesia. The frequency of happening ofsuch unpleasant eventsdepend on the cause of doing colonoscopy, presence of comorbid conditions, and the performance of any therapeutic procedure during colonoscopy.According to the British National Health System (NHS screening program for cancer), the total colonoscopy related hemorrhage is 0.65%, hemorrhage that required blood transfusion is 0.04%, and perforation of the colon is 0.06%. The complications risk increases when polyp removal is conducted. Factors related to the polyp, such as cecal polyps and large polyps, are associated with higher risk of hemorrhage or perforation [16].

A group of recent advances have sought to improve adenoma detection. Regular discussion of colonoscopy performance parameters with otherendoscopists and comparing the results proved to increaseadenoma detection rate [17].

Newer technical advancesin endoscopy such as “virtual chromoendoscopy” making mucosal enhancement with electronic applications withouttraditional dyeinstillation. Techniques like

Narrow Band Imaging (NBI) from (Olympus), i-scan technology from (Pentax), FICE technology and more recently LCI & BLI from(Fuj Film), resulted in worldwide spread of such technology. The fore mentioned applications are highly useful for characterization and grading of the lesion but adenoma detection has not been shown to be consistently increased.Lesion characterization improvement byelectronic enhancement applicationhas replaced conventional polyp retrieval followed by histological study.Water-assisted colonoscopy (WAC) in which water is installed at colonic intubation, instead of traditionally used Ambient Air or Carbon Dioxide. The technique include water immersion (WI), during which water is injected to open the large bowel at intubation and then sucked back during extubation, and water exchange (WE), in which aspiration of instilled water done mainly at the time of insertion [18].Endoscopic polypectomy of a high riskcolonic polyp with high malignant potentials is a special challenge in that concern whether complete removalhas been done with subsequent staging and a plan for appropriate further management is required. Usually Endoscopic MucosalResection (EMR), a procedureinvolves injection of anelevating fluid in the submucosa followed by excision of the lesion by snare, has beentraditionally the therapeutic option of these lesions. By all means mucosal resection might not be optimal for large lesions where submucosal extension is a big concern and we need for a moreen-bloc excision that securesatisfactory staging from the oncologic point of view.The need for a procedure that permits en-bloc resection of high malignant potential, advanced upper and lower alimentary canal lesions led endoscopists in japan to develop the technique of endoscopic submucosal dissection (ESD) as a more effective technique. This procedure makesuse of endoscopically applied knives and injectors to perform a deep submucosal, en-bloc resection that permits a proper histopathologic staging[19].So, this study was designedIs to make quality assessment of colonoscopy procedure conducted at Al-Diwaniyah Gastroenterology Center, pointing the defects and its causes & compare these results with the international figures.

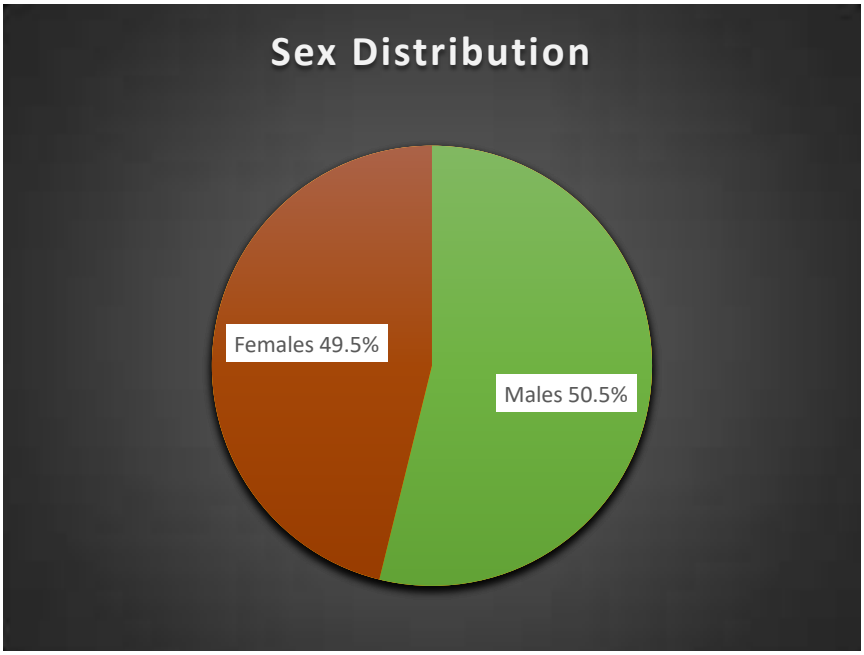
2. Patients and Methods:

This is a retrospective observational study conducted at Al-Diwaniyah Gastroenterology Center involved patients underwent colonoscopy for the period of one year, from February 2018 till January 2019. The number of Patients included are 303, (153 males and 150 females) ranging in age from 3 to 85 years; they were referred for this center from different hospitals and clinics in the province of Diwaniyah- Central Iraq for different diagnostic & therapeutic indications; The endoscopy done as an outpatient procedure under conscious sedation (intravenous Midazolam) in the majority of patients with general anesthesia for pediatric age group (age< 14 years) and also in special cases(complicated therapeutic procedures, anxious irritable patients and so on); All endoscopies done by four experienced endoscopists officially qualified for upper and lower endoscopy;Scopes used are (Olympus PCF-H290 ZL Adult & Pediatric colonoscopes) or (Pentax EC-3430 LKColonoscope) connected to(Olympus EVIS Lucera) or (Pentax i-Sc Video Processors) respectively.All patients were receiving full instructions regarding bowel preparation(Split-dose electrolyte regimen used) and also informed about the potential complications few days before the date of the endoscopy by direct person to person interviewwith the staff of endoscopy unit.

Patient were discharges home after 2-3 hours stay at the recovery unit to get sure that no unwanted complications took place during the procedure.

3. Results

303 patients included in the study composed of 153 males (50.5%)and 150 females (49.5%); and so, the male to female ratio is almost equal (1.02:1) ;(Figure 1).



Figure(1): Sex Distribution of the Study Population.

Age of study population. ranged from 3 to 85 years (mean age was 40.71 years). patients were divided into four age groups and the largest age group was (40-59 years) representing (38.28%), followed by (20-39 years) age group (30.03%); Figure (2).

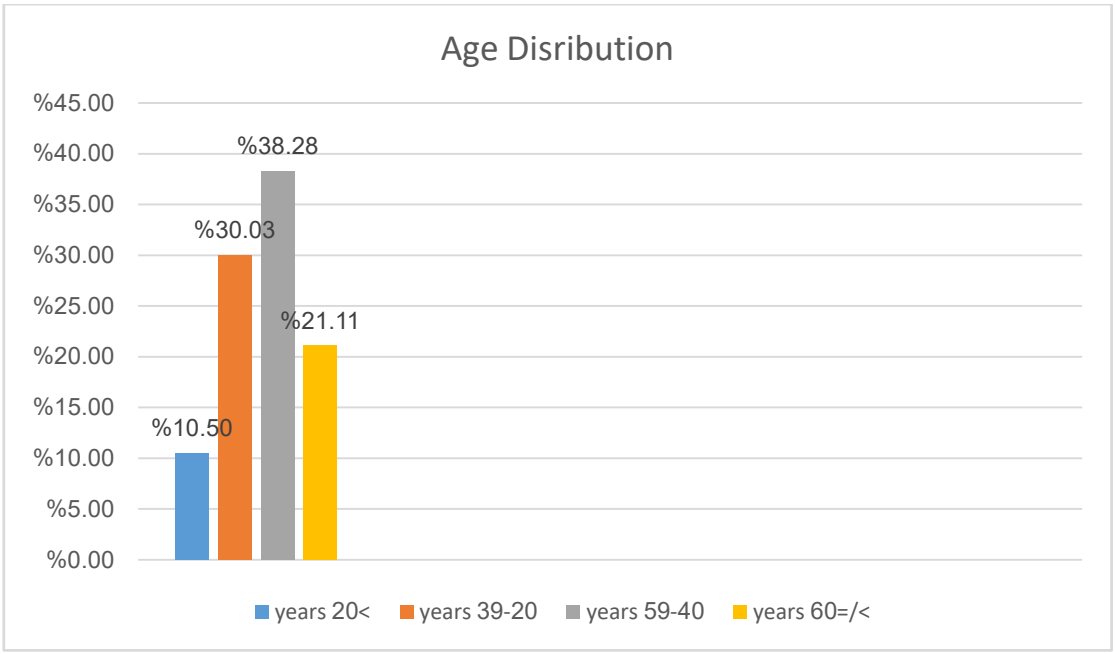
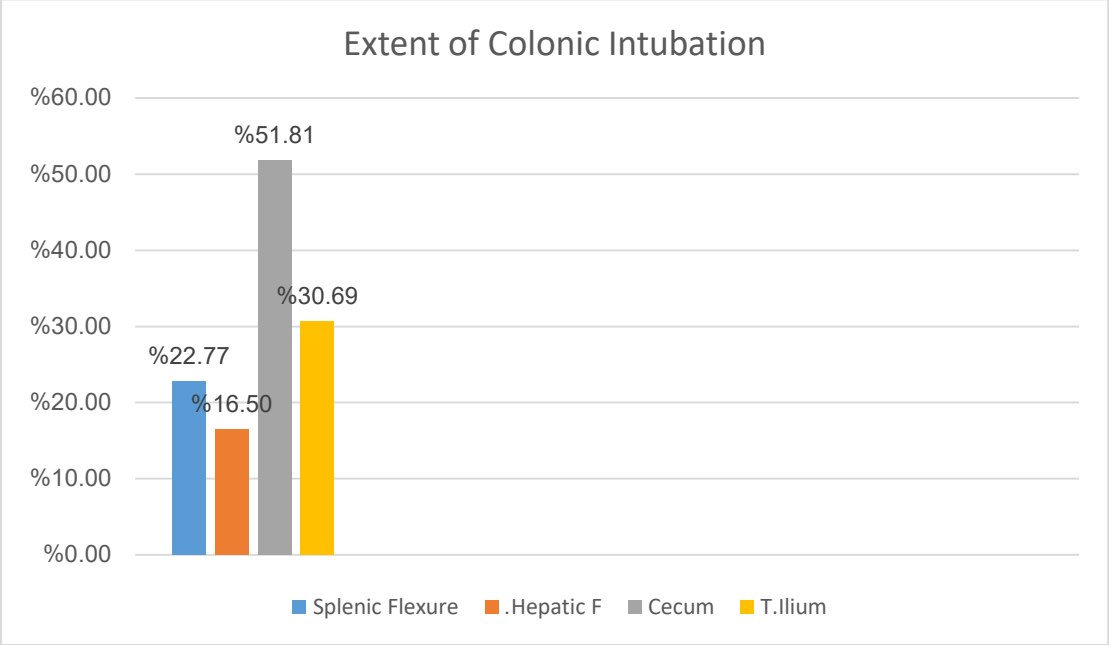


Figure (2): Age Distribution of the Study Population.

The Extent of colonic Intubation is one of the most imporatnt parametres in this study;In 96 patients(22.77%)the procedure was limited to the splenic flexure and only the Rectum& Left colon intubated; in 50 patients(16.50%) the procedure terminated at Hepatic Flexure; Cecal intubation achieved in 157 patients representing (51.81%) of the examined patients; and Terminal Ilium intubation was done in 93 patients (30.69%); Figure(3).



Figure(3): The Extent of Colonic Intubation.

Patients were divided int three categories according to the quality of bowel preparatio;good, acceptable(Adequate) and poor preparation.Only 30 patients (9.90%) found to be well prepared, 103 (33.99%) had poor preparation and the majority (17o patients representing 56.11%) had acceptable level of preperation; Table(1).

Table(1): The Level of Bowel Preperation in the Study Population.

%	No.	Bowel Preperation
9.90	30	Good
56.11	170	Acceptable
33.99	103	Poor
100	303	Total

The cause of Incomplete Intubationin patients in which cecal intubation was not done(146 patients) also Studied in this trial; Causes are categorized into four groups; those who have no indications for complete intubation (86 patients 58.90%); those in which cecal intubation not done due to poor preparation (45patients 30.82%); Irritable not well sedated patients (9 patients 6.16%) and finally those who had technical problem prohibiting cecal intubation such as bowel stricture or obstructive mass lesion (6 patients 4.12%).Table(2).

Table(2): Casuses of Incomplete Colonic Intubation.

%	No.	Cause
58.90	86	Absence of

		Indication
30.82	45	Poor Preperation
6.16	9	Inadequate Sedation
4.12	6	Technical Obstruction
100	146	Total

4. Discussion

The equal sex distribution of study population reflects the actual demographic facts of the provinceinhabitants. The largest age group examined is (40-59 year age); this age group is the candidate for screening program for Colonic Carcinoma which is not established yet in Iraq; screening is done only for special populations such as Those with family history of Colonic Cancer or Familial Adenomatous Polyposis and those with history of Ulcerative Colitis.The extent of colonic intubation is discussed ; Overall cecal intubation rate in this study is (51.81%), making in cosideration that in 86 patients there was no indication to perform complete colonoscopy and the procedure was intententionally terminated by the endoscopist, this iclude cases of Argon Plasma Coagulation for Solitary Rectal Ulcer, polypectomy for a Rectal Polyp , Patients presented with anal pin and cases of rectal bleeding in patients younger than 40 years; in all these coditions colonoscopy is ended at splenic flexure and if these cases excluded from the total number we will be left with 217 cases in which complete colonoscopy was intended by the endoscopist and so the cecal intubation rate will be 72.35%.The rate of cecal intubation is one ot the major parameter of quality assessment in colonoscopy and is a marker of competence in colonoscopy and this figure(72.35%) is still lower than the internationall accepted figure (more than 90%)[20-22]; several factors stand behind this lag; the training of endoscopist is a major factor, knowing that only half of endoscopist in the center have the certifide subspeciality training in endoscopy and the other half have short training courses and liscened to do endoscopy limited to the splenic flexure(Sigmoidoscopy) by the ministry of health , the other factor is the quality of colonic preperation which was obviously poor in the study population; the third factor is the adequacy of sedation often mentioned as a crucial factor in achieving cecal intubation[22]; Terminal Ilium Intubation acieved in30.69% of all patients and in 42.85% of those who need total colonoscopic intubation;these figures are lower than the international figures;JB Marshal & J S Barthel stated that When routinely intended, the distal ileum was intubated and visualized in 74% of patients (excluding cases of tumoral obstruction). In cases in which distal ileal inspection was deemed mandatory, the intubation rate was 91%.[23]and again we have to recall the same factorsmentioned ahead standing behind lower rate of cecal intubation.in addition the presence of technical barrier such as the presence of obstructive mass lesion, luminal stenosis or strictures or complex diverticular disease of the colon was present in 4.12% patients.The next point that needs to be discussed is the quality of colonic preparation; in this study only 9.90% of patients subjected to colonoscopy performed good level of preparation while 33.99% got poor qualitypreparation; The rates of inadequate preparation vary among studies; however, one trial concluded that 37% of the patients required another examination secondary to bad preparation [24].the terms ‘‘excellent’’, ‘‘good’’, ‘‘fair’’, and ‘‘poor’’ have been used in many clinical studies to grade thequalityof colonic preparation [25-28]; in this study we tried to simplify things more and we classified preparation level into poor, acceptable& good. And we found that poor preparation is the main factor stands behind incomplete colonic intubation.Several factors are playing a role in the quality of colonic preparation such as patients age, advanced age is found to be

associated with poor preparation due to many factors including sluggish colonic motility, multiple comorbidities including cardiac disease, multiple medication use that influence colonic motility & increase transit time [29-33]; we also noticed that pediatric age group was frequently presented to endoscopy with poor level of preparation, preparation of bowel in this age group is a real challenge and it has not been addressed in this study and needs to bestudied in the future.Socioeconomic level and the standard of education seen in many studies to be related to the quality of preparation;A lower level of education, as an indicator of lower socioeconomic condition, was recently proved to be an independent predictor of poor bowel cleansing in an Asian study of 501 patients[34]. In contrast, high level education and specific counseling of adult patients on preparation prescriptions was shown to enhance the quality of colonic preparation in a Canadian study of 38 patients[35].

5. Conclusions

Colonoscopy at al-Diwaniyah Gastroenterology center is providing a valuable & a good quality service to the province population, yet the competence of the staff measured by cecal and to be improved by providing the center by a highly qualified personnel Ilial intubation rates is still below the international figures and it needs and equipment also there must be more concentration upon proper bowel preperation.

6. References

1. Dik VK, Moons LM, Siersema PD. Endoscopic innovations to increase the adenoma detection rate during colonoscopy. World J Gastroenterol. 2014;20:2200–2211.
2. Zapka J, Klabunde CN, Taplin S, Yuan G, Ransohoff D, Kobrin S. Screening colonoscopy in the US: attitudes and practices of primary care physicians. J Gen Intern Med. 2012;27:1150–1158.
3. Lee SH, Huh GY, Cheong YS. A case of endoscopic resection of a colonic semipedunculated leiomyoma. J Korean Soc Coloproctol. 2011;27:215–219.
4. Varadarajulu S, Banerjee S, Barth BA, Desilets DJ, Kaul V, Kethu SR, Pedrosa MC, Pfau PR, Tokar JL, Wang A, et al. GI endoscopes. GastrointestEndosc. 2011;74:1–6.
5. Kim KM, Lee SH, Lee DJ, Kim KN, Seo SW, Lee HS, Lee DR. A randomized controlled trial of comparison on time and rate of cecal and termianl Ileal intubation according to adult-colonoscope length: intermediate versus long. J Korean Med Sci. 2014;29:98–105.
6. Wilkins T, Jester D, Kenrick J, Dahl J. The current state of colonoscopy training in family medicine residency programs. Fam Med. 2004;36:407–411.
7. Rex DK. Quality in colonoscopy: cecal intubation first, then what? Am J Gastroenterol. 2006;101:732–734.
8. Rex DK, Petrini JL, Baron TH, Chak A, Cohen J, Deal SE, Hoffman B, Jacobson BC, Mergener K, Petersen BT, et al. Quality indicators for colonoscopy. Am J Gastroenterol. 2006;101:873–885.
9. Chung JI, Kim N, Um MS, Kang KP, Lee D, Na JC, Lee ES, Chung YM, Won JY, Lee KH, et al. Learning curves for colonoscopy: a prospective evaluation of gastroenterology fellows at a single center. Gut Liver. 2010;4:31–35.

10. Froehlich F, Wietlisbach V, Gonvers JJ, et al. : Impact of colonic cleansing on quality and diagnostic yield of colonoscopy: the European Panel of Appropriateness of Gastrointestinal Endoscopy European multicenter study. GastrointestEndosc. 2005;61(3):378–84.

11. Parra-Blanco A, Nicolas-Perez D, Gimeno-Garcia A, et al. : The timing of bowel preparation before colonoscopy determines the quality of cleansing, and is a significant factor contributing to the detection of flat lesions: a randomized study. World J Gastroenterol. 2006;12(38):6161–6.

12.Rex DK, Imperiale TF, Latinovich DR, et al. : Impact of bowel preparation on efficiency and cost of colonoscopy. Am J Gastroenterol. 2002;97(7):1696–700.

13.302514d.18811. Cohen LB: Split dosing of bowel preparations for colonoscopy: an analysis of its efficacy, safety, and tolerability. GastrointestEndosc. 2010;72(2):406–12. 10.1016/j.gie.2010.04.05.

14.Centers for Disease Control and Prevention (CDC): Vital signs: colorectal cancer screening test use--United States, 2012. MMWR Morb Mortal Wkly Rep. 2013;62(44):881–8.

15. Rajasekhar PT, Lee TJ, Rutter MD, et al. : PWE-188 Using a "conversion factor" to estimate adenoma detection rate. Gut. 2012;61:A372–A373.

16. Rutter MD, Nickerson C, Rees CJ, et al. : Risk factors for adverse events related to polypectomy in the English Bowel Cancer Screening Programme. Endoscopy. 2014;46(2):90–7.

17. Abdul-Baki H, Schoen RE, Dean K, et al. : Public reporting of colonoscopy quality is associated with an increase in endoscopist adenoma detection rate. GastrointestEndosc. 2015;82(4):676–82. 10.

18. Leung FW: Water-aided colonoscopy. Gastroenterol Clin North Am. 2013;42(3):507–19.

19. Yamamoto K, Michida T, Nishida T, et al. : Colorectal endoscopic submucosal dissection: Recent technical advances for safe and successful procedures. World J GastrointestEndosc. 2015;7(14):1114–28.

20.Chak A, Cooper GS, Blades EW, et al: Prospective assessment of colonoscopic intubation skills in trainees. GastrointestEndosc. 1996, 44: 54-57.

21. Lieberman DA, Faigel DO, Logan JR, et al: Assessment of the quality of colonoscopy reports: results from a multicenter consortium. GastrointestEndosc. 2009, 69: 645-653.

22.Chen-Ming, Hsu Wei-Pin Lin ,Ming-Yao Su, Cheng,-Tang Chiu, Yu-Pin Ho, Pang-Chi Chen:Factors That Influence Cecal Intubation Rate During Colonoscopy in Deeply Sedated Patients:Journal of Gastroenterology and Hepatology 2012,jan. Volume 27, Issue 1;76-80.

23.John B. Marshall, James S. Barthel:The frequency of total colonoscopy and terminal ileal intubation in the 1990s:.GastrointestEndosc. VOLUME 39, ISSUE 4, P518-520, JANUARY 01, 1993.

24. Dahshan A, Lin CH, Peters J, et al. A randomized, prospective study to evaluate the efficacy and acceptance of three bowel preparations for colonoscopy in children. Am J Gastroenterol 1999; 94:3497–3501.

25. Burke CA, Church JM. Enhancing the quality of colonoscopy: the importance of bowel purgatives. GastrointestEndosc. 2007;66:565–573.

26. Aronchick CA, Lipshutz WH, Wright SH, Dufrayne F, Bergman G. A novel tableted purgative for colonoscopic preparation: efficacy and safety comparisons with Colyte and Fleet Phospho-Soda. GastrointestEndosc. 2000;52:346–352.

27. Rostom A, Jolicoeur E. Validation of a new scale for the assessment of bowel preparation quality. GastrointestEndosc. 2004;59:482–486. [PubMed]

28. Rostom A, Jolicoeur E, Dubé C, Grégoire S, Patel D, Saloojee N, Lowe C. A randomized prospective trial comparing different regimens of oral sodium phosphate and polyethylene glycol-based lavage solution in the preparation of patients for colonoscopy. GastrointestEndosc. 2006;64:544–552.

29.Schiller LR. Clinical pharmacology and use of laxatives and lavage solutions. J Clin Gastroenterol. 1999;28:11–18.

30. Gallagher P, O'Mahony D. Constipation in old age. Best Pract Res Clin Gastroenterol. 2009;23:875–887.

31. Heppner HJ, Christ M, Gosch M, Mühlberg W, Bahrmann P, Bertsch T, Sieber C, Singler K. Polypharmacy in the elderly from the clinical toxicologist perspective. Z GerontolGeriatr. 2012;45:473–478.

32. Cameron AJ, Shaw JE, Zimmet PZ. The metabolic syndrome: prevalence in worldwide populations. Endocrinol Metab Clin North Am. 2004;33:351–75.

33. Roger VL, Go AS, Lloyd-Jones DM, Benjamin EJ, Berry JD, Borden WB, Bravata DM, Dai S, Ford ES, Fox CS, et al. Heart disease and stroke statistics--2012 update: a report from the American Heart Association. Circulation. 2012;125:e2–e220.

34. Chan WK, Saravanan A, Manikam J, Goh KL, Mahadeva S. Appointment waiting times and education level influence the quality of bowel preparation in adult patients undergoing colonoscopy. BMC Gastroenterol. 2011;11:86.

35.Rosenfeld G, Krygier D, Enns RA, Singham J, Wiesinger H, Bressler B. The impact of patient education on the quality of inpatient bowel preparation for colonoscopy. Can J Gastroenterol. 2010;24:543–546.