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ORIGINAL ARTICLE

Appropriateness of Referrals for Upper Gastrointestinal Endoscopy

Adéquation des Parrainages pour l'endoscopie digestive haute

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ABSTRACT

BACKGROUND: **Uncomplicated dyspepsia has a low predictive value in diagnosing upper gastrointestinal organic disease making early endoscopy essential.**

OBJECTIVE: **To assess the reliability of clinical information in the diagnosis of organic disease in patients referred for upper gastrointestinal endoscopy.**

METHODS: **Patients who were referred for gastroscopy to the Korle Bu Teaching Hospital, in Accra between January and December, 2008 were interviewed and evaluated for this study. The patients' clinical data were correlated with the endoscopic findings to determine how appropriate the referrals were, based on the clinical information.**

RESULTS: **One thousand, six hundred and forty three patients were studies of whom 372 presented with alarm symptoms. Uncomplicated dyspepsia was the principal presenting symptom in 1271 patients. Overall, 522 (31.8%) patients had organic disease, 440 (26.8%) inflammatory conditions and 681 (41.4%) were negative endoscopies. Two hundred and nine (56.2%) patients with alarm symptoms and 313 (24.6%) without alarm symptoms (p value, OR, 95% CI; <0.001, 3.92, 3.083-5.00) had organic disease. Presentations with bleeding and suspicion of malignancy showed statistical significance with the finding of organic disease while anaemia did not. Dyspepsia was strongly associated with negative endoscopy, 84% vrs 60%, p value <0.001. Gastric malignancies were associated with age 50 years and above. The three common benign diseases of peptic ulcer, gastric ulcer and gastritis showed strong similarity in presentation and were unpredictable clinically.**

CONCLUSION: **Patients referred for endoscopy were young in whom there was a high prevalence of organic disease which were mostly benign. WAJM 2011; 30(5): 342–347.**

Keywords: **Gastroscopy, dyspepsia, alarm symptoms, gastric cancer, peptic ulcer disease.**

RÉSUMÉ

CONTEXTE: Simplicité dyspepsie a une faible valeur prédictive dans le diagnostic de maladie gastro-intestinale supérieure organique rendant endoscopie précoce essentiel.

OBJECTIF: Pour évaluer la fiabilité de l'information clinique dans le diagnostic d'une maladie organique chez des patients adressés pour une endoscopie digestive haute.

MÉTHODES: Les patients qui ont été visés pour la gastroscopie à l'hôpital universitaire de Korle Bu, à Accra entre Janvier et Décembre 2008 ont été interviewés et évalués pour cette étude. Les données des patients cliniques ont été corrélés avec les résultats endoscopiques afin de déterminer comment échéant, les références étaient, sur la base de l'information clinique.

RÉSULTATS: un mille six cent quarante-trois patients étaient des études dont 372 ont présenté des symptômes d'alarme. Simplicité dyspepsie était le symptôme principal de présenter en 1271 des patients. Dans l'ensemble, 522 (31,8%) patients avaient une maladie organique, 440 (26,8%) des conditions inflammatoires et 681 (41,4%) étaient négatifs endoscopies. Deux cent neuf (56,2%) patients présentant des symptômes d'alarme et 313 (24,6%) sans symptômes d'alarme (valeur p, OU, IC à 95%; <0,001, 3,92, 3,083 à 5,00) avaient une maladie organique. Présentations des saignements et de la suspicion de malignité ont montré une signification statistique à la conclusion d'une maladie organique alors que l'anémie n'a pas fait. La dyspepsie a été fortement associée à la endoscopie négative, 84% vrs 60%, valeur de p <0,001. Tumeurs malignes gastriques ont été associés à l'âge de 50 ans et plus. Les trois communes des maladies bénignes de l'ulcère gastroduodénal, ulcère gastrique et la gastrite a montré une forte similitude dans la présentation et étaient imprévisibles sur le plan clinique.

CONCLUSION: Les patients adressés pour une endoscopie étaient jeunes en qui il y avait une forte prévalence de la maladie organique qui étaient le plus souvent bénigne. **WAJM 2011; 30(5): 342–347.**

Mots-clés: Gastroscopie, la dyspepsie, les symptômes d'alarme, le cancer gastrique, ulcère gastro-duodénal.

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Abbreviations: AASGE, American Society for Gastrointestinal Endoscopy; **BSG,** British Society for Gastroenterology; **KBTH,** Korle Bu Teaching Hospital; **DU,** Duodenal Ulcer; **GT,** Gastric Tumour; **GU,** Gastric Ulcer; **N,** Normal; **OR,** Odds Ratio; **OT,** Oesophageal Tumour; **OV,** Oesophageal Varices.

The advent of the gastroscope saw a decline in the prevalence of peptic ulcer disease worldwide, partly as a result of the marked improvement it brought in diagnosing definite organic diseases of the upper gut in patients presenting with dyspepsia. The high sensitivity and specificity of the gastroscope of more than 95% coupled with the short learning curve associated with its' use made it a handy tool.[1] It has become the standard for investigating the upper gastrointestinal track. Demand for the service rose with an attendant increase in waiting times and high cost of treatment of dyspepsia; the determinant being the high prevalence (23–41%) of upper gastrointestinal symptoms in the community.[2–6] The concerns that this high demand brought about led to the development of guidelines for referrals for gastroscopy by the American Society for Gastrointestinal Endoscopy (ASGE), American Gastroenterology Association and the British Society of Gastroenterology (BSG) together with review groups like the ROME working party and RAND corporation. These guidelines require the primary physicians to rely greatly on the symptoms, the clinical examination and, if required, *H. pylori* testing to treat patients with functional dyspepsia empirically and to refer to a gastroenterologist when symptoms are not relieved on treatment, patient is older than 55years or there are alarm signs.[7–10] This approach has significantly reduced the waiting times in many endoscopy centres, but new concerns are emerging.

There is emerging evidence from systematic reviews which suggests that the patient's dyspeptic symptoms appear inefficient for diagnosing the presence or absence of organic disease.[11–15] Also the use of clinical examination to distinguish between organic and functional dyspepsia remains controversial. For example, the elicitation of epigastric tenderness by palpation has been reported to have a sensitivity of 64% and a specificity of 30% in diagnosing upper gastrointestinal pathology.[16] Therefore patients with early organic disease still stand some risk of delayed diagnosis when the strict criteria of patient selection for endoscopy based on clinical information, is relied upon. The consideration for the initial clinical prioritization of the patients to determine the urgency for endoscopy is geared towards addressing this current concern.[17]

Additionally, important aspects in patient care that are infrequently discussed, because of lack of information, are the concerns of the patients who present with dyspepsia. These concerns could vary depending on geographic area, the patient's experience with and appreciation of diseases, and the age. In the developed world the concerns have usually been fear of a cardiac disease or a malignancy, whereas in the developing world it is frequently of a peptic ulcer diagnosis. A holistic patient-care approach will require that such anxieties are addressed expeditiously by obtaining definite diagnoses. This could reduce health care utilization by limiting the number of second opinion consultations that patients make.

A seven-year review of endoscopy practice at the Korle Bu Teaching Hospital (KBTH) saw a large number of young patients with complaints of dyspepsia having negative endoscopy.[18] The authors emphasized good clinical history taking by clinicians who should be circumspect in referrals of younger patients for gastroscopy. However, a recent study of peptic perforations at the same hospital found that the affected were mostly young people (mean age 41 years, SD 16years) who are low income earners, indulge in NSAIDS abuse and tend to have acute ulcer perforations.[19] Therefore, a strict application of guidelines developed from environments, where the demographic and clinical characteristics of patients differ and hence with different upper gastrointestinal disease patterns, to this setting could delay diagnosing organic disease in dyspeptic patients who will present later with complications. A need therefore exists to evaluate the clinical information of patients in the developing world with upper gastrointestinal symptoms presenting for endoscopy to determine features that are associated with finding of organic disease.

The objective of this study was to assess the reliability of clinical information in the diagnosis of organic disease in patients referred for upper gastrointestinal endoscopy at the Korle-Bu Teaching Hospital to help determine whether our current unrestricted open-access policy needs review. It evaluated, the severity of upper gastrointestinal symptoms that patients were referred with and the extent to which these symptoms were predictive of the endoscopic findings by strengths of association. We specifically correlated the patients age, sex, status of referring clinician, symptoms of abdominal pain or discomfort and the presence or absence of alarm symptoms (bleeding, unintentional significant weight loss, iron deficiency anaemia and, dysphagia and/or sustained vomiting) with the endoscopic findings of organic disease defined as any of oesophaheal ulcers, varices, strictures, tumours; gastric ulcers, varices, tumours and duodenal ulcers or strictures.

SUBJECTS, MATERIALS, AND METHODS

The endoscopy unit at the Korle-Bu Teaching Hospital (KBTH) is the largest and only publicly owned endoscopy unit in the Greater Accra Region of Ghana. It is manned by nine endoscopists, made up of eight general surgeons and one gastroenterologist, who take fixed turns in the week to investigate patients. The patients for endoscopy are referred by non-endoscopists working in peripheral health institutions, clinics, polyclinics, district and parastatal hospitals within the Greater Accra region. These patients are seen for appointment dates by the endoscopists at their busy surgical or gastroenterology clinics. The endoscopists also refer their own patients that they are managing for investigation if indicated.

This study was conducted on consecutive patients who came for endoscopy at the KBTH between January 1, 2008 and December 31, 2008. It excluded patients who did not consent to be interviewed or re-evaluated, patients who had had a previous gastroscopy within the past one year or had follow up endoscopy to treat varices or monitor healing of a previously diagnosed ulcer, patients who had bled

massively acutely and were incapable of giving meaningful information, and moribund patients with clear physical signs of malignancy: cachexia, ascites, palpable epigastric mass, distended upper abdominal subcutaneous veins and palpable Virchow's node. Also excluded were patients who had upper abdominal operations related to the oesophagus, stomach, duodenum and the hepato-pancreatobiliary system.

Prior to endoscopy, each patient was re-evaluated by one of two staff nurses or a clinical year student of the University of Ghana Medical School who were trained for this project. They administered a pre-tested questionnaire, and also performed basic abdominal physical examination to achieve complete clinical data. This was necessary because in the absence of a standard referral form the abridged referral forms of varied origins presented by the patients at the endoscopy unit contained varied amounts of inadequate clinical information.

The variables that were determined were the demography of the patients, time lapse between referral and testing dates, clinical diagnostic detail, status of the referring clinician (endoscopist or non-endoscopist), the haemoglobin levels of clinically anaemic patients and the endoscopic findings.

Statistical Analysis

We used the Odds Ratio (OR), obtained by logistic regression, to study associations between variables and endoscopic findings of organic disease.

RESULTS

A thousand seven hundred and ten gastroscopies were performed at the endoscopy unit of the Korle-Bu Teaching Hospital, which serves a population of about three million people, in the 12 months study period. Seventy seven (4.5%) patients out of this number were excluded from the study. They were made up of 37 who did not consent for re-evaluation, 8 very ill patients and 32 who had been investigated earlier and were either for follow-up treatment or to confirm ulcer healing in patients with gastric ulcers, and those who had partial gastrectomy performed on them. Of the remaining 1643 patients, 372 presented with alarm symptoms made up of bleeding in 272, significant weight loss, dysphagia or vomiting (suspected malignancy) 79 and iron deficiency anaemia (Hb<8gm/dl) 31patients. Dyspepsia was the principal presenting symptom in 1271 patients.

There were 792 males and 851 females with a mean age of 45.3 ± 16.9 years. The mean waiting time for investigation was 13 ± 9.2 days.

The commonest conditions found were gastritis 349 (21.1%); duodenal ulcer (DU), 184 (11.2%); gastric ulcer (GU) 95 (5.8%); oesophageal varices 91 (5.5%); gastric malignancy 64 (3.9%); and duodenitis 45(2.7%). Erosive oesophagitis 35 (2.1%), hiatus hernia 19 (1.2%), oesophageal candidiasis 17 (1.0%), gastric polyps 14 (0.9%), gastric erosions 10 (0.6%) and oesophageal malignancy 10 (0.6%) were less common, as were eight other uncommon conditions found in 27 (1.8%) patients.

Table 1 details the basic demography of the patients (age and sex) in

Table 1: Age and Sex of Patients in Relation to Indications for Endoscopy and the Commonest Findings

Indication	N (M/F)	Age (Yrs)	Common Endoscopic Findings
Bleeding	272 (174/98)	47.0 ± 16.0	OV 26.5%, Gastritis 15.1%, DU 12.1%, GU 8.5%, N 23.9%
Malignancy	69 (43/13)	54.0 ± 17.0	GT, 26.1%, OT, 7.2%, DU 7.2%, GU 5.8%, OV 4.8%, N 26.1%
Anaemia	31 (18/13)	54.5 ± 15.5	Gastritis 19.4%, DU 12.9%, GT 9.7%, EO 9.7%, N 35.5%
Dyspepsia	1271 588/713	44.1 ±16.8	Gastritis 23.4%, DU 11.1%, GU 5.3%, D 2.7%, GT 2.4%, N 46.3%

DU, Duodenal Ulcer; GT, Gastric Tumour; GU, Gastric Ulcer; N, Normal; OT, Oesophageal Tumour; OV, Oesophageal Varices.

Table 2: Association between Indications for Endoscopy and Finding of Organic Disease

Indication	Normal N=699	Organic Disease N=522	P-value
Bleeding	65 (9.3)	154 (29.5)	<0.001
Anaemia	11 (1.6)	12 (2.3)	0.4
Malignancy	18 (2.6)	43 (8.2)	<0.001
Dyspepsia	587 (84.0)	313 (60.0)	<0.001

Values are N(%).

Table 3: Endoscopic Findings in Patients with and without Alarm Symptoms

Endoscopic Finding	Number 1559	Alarm Symptoms + N 356	No Alarm Symptoms N 1203	P Value
DU	184 (11.8)	43 (12.1)	141 (11.7)	0.9
GU	95 (6.1)	28 (7.9)	67 (5.6)	0.1
Malignancy	74 (4.7)	40 (11.2)	34 (2.8)	<0.001
Gastritis	349 (22.4)	52 (14.6)	297 (24.7)	<0.001
Duodenitis	49 (3.1)	15 (4.2)	34 (2.8)	0.2
O. Varices	91 (5.8)	76 (4.9)	15 (1.2)	<0.001
Oesophagitis	35 (2.2)	8 (2.2)	27 (2.2)	1.0
Normal	682 (43.7)	94 (26.4)	588 (48.9)	<0.001

Values are N(%).

relation to the four major presenting conditions and their association with the commonest endoscopic findings. Patients who presented with anaemia or suspicion of malignancy were on average older (about 55yrs) than those with bleeding or dyspepsia (about 44–48yrs). Males were predominant among those with alarm symptoms (M:F=1.4-1.8:1) than females who rather dominated in those with dyspepsia (F:M = 1.2:1).

Overall, 522 (31.8%) patients had organic disease; 440 (26.8%) inflammatory conditions, which included gastritis, gastric erosion, non-erosive oesophagitis and duodenitis; and 681 (41.4%) were negative endoscopies. Two hundred and nine (56.2%) patients with alarm symptoms and 313 (24.6%) without alarm symptoms (p value, OR, 95% CI; <0.001, 3.92, 3.083–5.00) had organic disease. Presentations with bleeding and suspicion of malignancy showed statistical significance with the finding of organic disease while anaemia did not. Dyspepsia was strongly associated with negative endoscopy, 84% vrs 60%, (p value <0.001) (Table 2).

Table 3 outlines the association between the commonest endoscopic findings and the presence of alarm symptoms. On logistic regression, endoscopic findings of malignancy (either gastric or oesophageal), and oesophageal varices were the only conditions that were strongly associated with the presence of alarm symptoms. Findings of gastritis or negative endoscopy were strongly associated with the absence of alarm symptoms. Seventeen (26.6%) and 47 (73.4%) patients with endoscopic finding of gastric malignancy were aged less than 50 years and 50 years or older respectively.

In the patients with dyspepsia, an attempt was made to evaluate clinical variables of age, sex, status of referring clinician, type of dyspepsia (upper abdominal pain or discomfort), the troublesomeness of abdominal discomfort, the type of abdominal pain (ulcer-like epigastric pain or non-ulcer-like abdominal pain) in those with significant localisable pain, and their association with an endoscopic finding of organic disease as depicted in Table 4.

Table 4: Relationship between Clinical Variables and Endoscopic Finding of Organic Disease in Patients with Dyspepsia.

	Variable	N	No (%) with organic d(sex)	OR	95% CI	P Value
1.	Age					
	< 50 yrs	810	162 (20.0)	1.00	1.50 – 2.53	<0.001
	≥ 50 yrs	461	151 (32.8)	1.96		
2.	Sex					
	Male	558	162 (29.0)	1.53	1.18 – 1.97	a0.012
	Female	713	151 (21.2)	1.00		
3.	Clinician Status					
	Endoscopist	757	198 (26.2)	1.23	0.94 – 1.6	0.13
	Non Endoscopist	514	115 (22.4)	1.00		
4.	Dyspepsia type					
	Ulcer-like Epi. Pain	823	225 (27.3)	1.10	0.89 – 1.35	0.40
	Abd Discomfort	1066	272 (25.5)	1.00		
5.	Discomfort					
	Troublesome	967	247 (25.5)	1.02	0.63 – 1.64	0.94
	Not Troublesome	98	25 (25.5)	1.00		
6	Abdominal Pain					
	Ulcer-like epi pain	832	225 (27.3)	1.70	1.25 – 2.33	<0.001
	Non-Ulcer like Abd pain	355	64 (18.3)	1.00		

ULE, Ulcer-like epigastric pain.

Table 5: Association between Three Commonest Endoscopic Findings in Patients with Dyspepsia and their Clinical Information

Finding	Variable	Clinical Information	N	N (%) OD	OR	95% CI	P value
Duodenal Ulcer							
	Sex	M	558	9 7(17.4)	1.60	1.16–2.19	0.005
		F	713	83(11.6)	1.00		
	Age	<50	810	79(9.8)	1.00	0.49–0.99	0.05
		≥50	461	62(13.4)	0.70		
	Abd Pain	Ulcer-like	823	109(13.2)	2.20	1.38–3.52	<0.001
		Non ulcer-like	355	23(6.5)	1.00		
Gastric Ulcer							
	Sex	M	558	35(6.3)	1.42	0.87–2.33	1.17
		F	713	32(4.5)	1.00		
	Age	<50	810	29(3.6)	1.00	1.47–3.98	<0.001
		≥50	461	38(8.2)	2.42		
	Abd Pain	Ulcer-like	823	49(6.0)	1.98	1.02–3.85	0.04
		Non ulcer-like	355	11(3.1)	1.00		
Gastritis							
	Sex	M	558	148(26.5)	1.27	0.98–1.65	0.07
		F	713	149(20.9)	1.00		
	Age	<50	810	178(22.0)	1.00	0.62–1.06	0.13
		≥50	461	119(25.8)	0.81		
	Abd Pain	Ulcer-like	823	225(27.8)	1.93	1.41–2.66	<0.001
		Non ulcer-like	355	59(16.6)	1.00		

Age 50 years and older, male sex and ulcer-like epigastric pain showed statistical in finding of organic disease. In the patients with dyspepsia in whom the commonest findings were gastritis 23.4%, duodenal ulcer 11.1% and gastric ulcer 5.3% (Table 1) an attempt was made, as shown in Table 5, to correlate these findings reversely to sex, age and type of abdominal pain presented by the patients. Male sex and ulcer-like epigastric pain showed strong associations with finding of duodenal ulcer, with age 50 years and above as well as ulcer-like epigastric pain showing statistically significant association with the finding of gastric ulcer, while ulcer-like epigastric pain was the only variable strongly associated with gastritis.

DISCUSSION

This study has shown that there was a high number of organic diseases among patients who presented for upper gastrointestinal endoscopy at the KBTH. They were younger, mean age of 45.3 years being a decade lower than that reported from the developed world, and majority (77.4%) of them presented with dyspepsia mainly.[20, 21] Eight hundred and ten (63.7%) of the dyspeptic patients were aged less than 50 yrs and 461 (36.3%) 50 years or older. The mean waiting time overall of 13 days, which could be due to the comparatively low volume of endoscopies performed, meets internationally recommended waiting period of two weeks for high risk patients to undergo diagnostic endoscopy.[12,14,15]

The primary aim of endoscopy in the management of patients with upper gastrointestinal symptoms is to detect organic disease. The number of patients with organic disease of 31.8% overall and 24.1% in the dyspeptic patients double those found in reports from the Western world where the *H. pylori* prevalence rate in the younger generation is <30% 20, 22, 23(K). The increased risk associated (OR 1.96, p. value <0.001) with finding of organic disease in patients who were 50 years or older (32.8%) relative to those younger than 50 years (20%) needs cautious interpretation since the 20% which formed the denominator for the comparison is not favourable. The odds of a person with dyspepsia who is less than 50 years old with a probability of 20% having an organic disease is higher than those derived from the probabilities of 11–21% reported for all age groups put together and very much higher than for similar age groups in reported series from the Western world.[15, 20–22] Practically therefore, we cannot support the contention that younger patients with dyspepsia and no alarm symptoms should be treated empirically. Earlier reports from our centre had indicated that there was a high prevalence of H. pylori infection in the population and abuse of NSAIDS among the younger generation which could account for these results.[19,24] We realized a 41.4% negative endoscopy rate which is at par with the 35–45% reported in other studies.[20, 22]

International guidelines for gastroscopy recommend empirical treatment for both inflammatory and benign organic conditions like peptic ulcer by testing for H. pylori and then treating.[8,9] Testing for *H. pylori* is currently not available in many health institutions in Ghana because of the high cost of test kids. In the setting of limited health care resources it is arguably prudent to target those resources to those who are most likely to benefit from them. Adding the costs of *H. pylori* testing to that of endoscopy and histopathology may be beyond the means of many patients who still bear their own health care cost on these aspects of their management. Careful patient selection for early endoscopy guided by locally available data becomes acutely relevant. This study has demonstrated that the presence of alarm symptoms and/or ulcer-like epigastric pain, male sex and age 50 years and over could predict the finding of organic disease and perhaps could serve as a guide only.

We selected age 50 instead of 55 years as the cut-off for patients for this study based on the age demography of the group itself. We observed that 64% of the 74 patients with malignancy were aged 50 years and above; 40 (54%) of these patients presented with alarm symptoms. Of significance were those who presented with alarm symptoms suggestive of malignancy since there was a strong association between their symptoms and finding of organic disease. Patients with early stage gastric cancer have dyspeptic symptoms indistinguishable from those with benign organic disease, and with the high prevalence of dyspepsia in the community which could affect appointment times, it could be recommended that patients in their fifth decade presenting with significant dyspepsia should be prioritized for early diagnostic endoscopy.

Gastritis, duodenal and gastric ulcers were the most frequent benign organic conditions found. The three share common aetio-pathogenic pathway. There is a strong association between *H. pylori* infection, gastritis and the development of peptic ulcers of the duodenum, stomach or both. It is in this light that they present a similar symptomatology even though the patients with gastric ulcers tend to be about a decade older than those with gastritis and duodenal ulcers. For the patients who were found with these conditions at endoscopy statistically significant associations were demonstrated in male sex, age 50 years and older and ulcer-like epigastric pain, with the strengths of association from the ORs of 1.60, 2.42 and 2.42 respectively encouraging. However, the overall results from the analysis of these conditions, in juxtaposition, did not demonstrate any clear pattern and hence did not define any practical guide that could help in differentiating the benign organic diseases of peptic ulcer from the inflammatory conditions.

We executed this project conscious of some limitations. The basic design of the study was to assess the primary objective of endoscopy, i.e., finding organic disease as opposed to biopsy and surgery. While histopathological results of biopsies could help define the exact disease pattern in patients for endoscopy, this was not incorporated in the study because an earlier study had answered that question.[18] We are equally aware of the challenges that exist in diagnosing early ulcerated gastric cancer endoscopically. This could affect the number of cases categorised as either gastric ulcers or malignancies. We were confident of the high sensitivity of

gastroscopy and the investigative acumen of the endoscopists and believe such misplaced diagnosis may be few and negligible. Finally, because the study accrued data from hospital patients who were referred by clinicians, a selection bias could be contemplated. We believe that all patients who were sent for the investigation deserved it from the clinical scenarios that they presented to the physicians either from the first or subsequent visits. There is also no envisaged way of investigating patients in the population whose dyspepsia have resolved with empirical treatment without attracting the wrath of institutional ethics board.

Conclusion

Patients referred for endoscopy were young and had a high prevalence of organic disease which were mostly benign. Malignancy tended to affect people who were 50 years and older. We recommended that in view of the high prevalence of organic diseases, found mostly in younger people, with symptomatology that cannot easily be differentiated from inflammatory conditions of the stomach and duodenum in the setting of reported high prevalence of *H pylori* infection and abuse of NSAIDS, the open access policy for upper gastrointestinal endoscopy should be maintained.

REFERENCES

1. Levine DA. Role of the double-contrast upper gastrointestinal series in the 1990s. *Gastroenterol Clin North Am.* 1995; **24:** 289–308.
2. Drossman DA, Li Z, Andruzzi E, Temple RD, Talley NJ, Thompson WG, *et al*. US householder survey of functional gastrointestinal disorders. Prevalence, sociodemography and health impact. *Dig Dis Sci.* 1993; **38:** 1569–1580.
3. Locke GR 3rd, Talley NJ, Fett SL, Zins Meister AR, Meltom LJ 3rd. Prevalence and clinical spectrum of gastro-esophageal reflux; a population based study in Olmsted county, Minnesota. *Gastroenterology.* 1997; **112:** 1448–1456.
4. Westbrook H, Talley NJ, Mclntosh JH. Dyspepsia – Prevalence, subgroups and health care seeking: A random survey of 2,300 households. *Gastroenterology.* 1998; **1:** A49.
5. British Society of Gastroenterology. Guidelines in Gastroenterology: dyspepsia management guidelines, London: BSG. 1996.
6. Moayyedi P, Forman D, Braunholtz D, Feltbower R, Crocombe W, Liptrott M, *et al.* The proportion of upper gastro-intestinal symptoms in the community associated with *Helico-bacter pylori,* life style factors, and nonsteriodal anti-inflammatory drugs: Leeds HELP study Group. *Am J Gastroenterol.* 2000; **95:** 1448–1455. Doi: 10.1111/j.1572-0241.2000.2126_ 1.x
7. North of England dyspepsia Guidelines Development Group. Dyspepsia: managing Dyspepsia in Adult in primary care. London. England: National Institute of Health and Clinical Excellence. 2004.
8. British Society of Gastroenterology. Guidelines in Gastroenterology: dyspepsia management guidelines, London: BSG. 2002.
9. Tally NJ, Vakil N, Moayyedi P. American Gastroenterology Association Technical Review on the evaluation of dyspepsia. *Gastroenterology.* 2005; **129:** 1756–1780.
10. Scottish Intercollegiate Guideline Network. Guideline No 68: Dyspepsia. Edinburgh, Scotland: Scottish Inter-collegiate Guidelines Network. 2003.
11. Moayyedi P, Talley NJ, Fennerty MB, Vakil N. Can the clinical history distinguish between organic and functional dyspepsia? *JAMA.* 2006 Apr 5; **295:** 1566–1576.
12. Vakil N, Moayyedi P, Fennerty MB, Talley NJ. Limited value of Alarm features in the diagnosis of upper gastrointestinal malignancy: systematic Review and meta-analysis. *Gastro-enterology.* 2006; **131:** 390–401.
13. Bytzer P, Schaffalitzky de Muckadell OB. Prediction of major pathological conditions in dyspeptic patients referred for endoscopy: a prospective validation-study of a scoring system. *Scand J Gastroenterol.* 1992; **27:** 987–992.
14. Kapoor N, Bassi A, Sturgess R, Bodger K. Predictive value of Alarm features in a rapid access Gastrointestinal cancer service. *Gut.* 2005; **40:** 40–45. Doi; 10.1136/gut.2004.039438.
15. Wallace MB, Durkalski VL, Palesch YY, Libby ED, Jowell PS, Nickle NJ, *et al.* Age and alarm symptoms do not predict endoscopic findings among patients with dyspepsia: a multicentre database study. *Gut.* 2001; **49:** 29–34.
16. Priebe WM, Da Costa LR, Beck IT. Is epigastric tenderness a sign of peptic ulcer disease? *Gastroenterology.* 1982; **82:** 16–19.
17. Mariotti G, Meggio A, de Pretis G, Gentilini M. Improving the appro-priateness of referreals and waiting times for endoscopic procedures. *J Health Serv Res Policy.* 2008; **13:** 146–151.
18. Aduful HK, Naaeder SB, Darko R, Baako BN, Clegg-JNA, Nkrumah KN, *et al.* Upper Gastrointestinal endos-copy at the Korle-Bu Teaching Hospital, Accra, Ghana. *GMJ.* 2007, Mar; **41:** 12–16.
19. Dakubo JCB, Naaeder SB, Clegg-Lamptey JNA. Gastroduodenal peptic ulcer perforation. *EAMJ.* 2009, Mar; **86:** 417–426.
20. Voutilainen M, Mäntynen T, Mauranen K, Kunnamo I, Juhoha M. Is it possible to reduce endoscopy workload using age, alarm symptoms and *H. pylori* predictors of peptic ulcer and oesopha-gogastric cancer? Digestive and liver disease. 2005; **37:** 526–532. Doi; 10.1016/j.dld.2005.01.012
21. Lieberman D, De Garmo P, Fleischer D, Eisen G, Halfand M. Pattern of endoscopy use in the United States. *Gastroenterology.* 2000; **118:** 619–624.
22. Thomson ABR, Barkun AN, Armstrong D, Chiba N, White RJ, Daniel S, *et al.* The prevalence of clinically significant endoscopic findings in primary care patients with uninvestigated dyspepsia: the Canadian Adult Dyspepsia Emperic Treatment – Prompt Endoscopy (CADET-PE) study. Alimant. *Pharmacol Ther.* 2003; **17:** 1481–1491. Doi; 10.1046/j.0269-2813.2003.0164.x
23. Veldhugzen Van Zanten SJ, Pollack PT, Best LM, Bezanson GS, Marrie TJ. Increasing prevalence of Helicobacter pylori infection with age: continuous risk of infection in adults rather than cohort effect. *J Infect Dis.* 1994; **169:** 434–437.
24. Baako BN, Darko R. Incidence of *H. pylori* infection in Ghanaian patients with dyspeptic symptoms referred for upper gastro-intestinal endoscopy. WAJM 1996; **15:** 223–227.