

# Upper gastrointestinal endoscopy as an initial investigation in dyspepsia — A Malaysian experience

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## Summary

The role of fiberoptic upper gastrointestinal endoscopy as the primary investigation in Malaysians presenting with dyspepsia was studied in 1119 patients. Five hundred and sixty-two of the examinations (50 percent) were normal. Females below 40 years of age were very likely to have normal endoscopies. Peptic ulcer was seen in 21 percent of patients while visual evidence of gastric or duodenal mucosal disease (gastritis or non-erosive duodenitis) was reported in 20 percent. With increasing age, the prevalence of (1) peptic ulcer steadily increased and (2) non-ulcer dyspepsia decreased.

*Key words:* Non-ulcer dyspepsia, peptic ulcer, endoscopy, gastric carcinoma.

## Introduction

Dyspepsia is a very common complaint in hospital and in general practice. It may be defined as upper abdominal or retrosternal pain or discomfort, heartburn, nausea, vomiting or other symptoms considered to be referable to the proximal alimentary tract.<sup>1</sup>

Management involves identifying those with an organic illness and treating them appropriately. Endoscopically diagnosed 'organic' dyspepsia includes the presence of specific lesions — such as peptic ulcer, erosive duodenitis, esophagitis, esophageal ulcers, and gastric and esophageal carcinoma. Non-ulcer dyspepsia indicates the absence of these specific lesions. It is difficult to differentiate between these two groups by symptoms alone.<sup>2</sup> Hence, patients are investigated, either by upper gastrointestinal endoscopy or barium meal X-ray. It has been established that endoscopy is more sensitive than radiology in picking up lesions.<sup>3</sup>

This study was done to evaluate the role of upper gastrointestinal endoscopy in Malaysian patients presenting with dyspepsia.

## Materials and methods

Data from all upper gastrointestinal endoscopies performed at the Endoscopy Unit, Department of Medicine, National University of Malaysia (NUM), Kuala Lumpur, over a 33-month period (April 1985 to December 1987), was fed into a mainframe computer at the Computer Centre, Medical Faculty, NUM and analysed using an SAS software package.<sup>4</sup> The majority of endoscopies were performed by the two authors, the remainder were done by trainees supervised by the authors.

On 1697 patients, 2158 endoscopies were performed. To rule out any bias, all endoscopies that were repeated were excluded. Of these, 1119 (66%) presented with dyspepsia as the main symptom and formed the population studied. This population of 1119 patients was called the 'All Endoscopies' group. This was subdivided into two main groups:—

- 1) Endoscopically diagnosed 'organic' dyspepsia (EOD) — with definite evidence of specific lesions — peptic ulcer, erosive duodenitis, esophagitis, esophageal ulcers and malignancies in the esophagus and stomach. Peptic ulcer consisted of gastric ulcer (GU), duodenal ulcer (DU) or both. Erosive duodenitis was diagnosed on the finding of visible erosions, and was included in 'organic' dyspepsia as some evidence indicates that erosive duodenitis is a variant of peptic ulcer disease.
- 2) Non-ulcer dyspepsia (NUD) — where the endoscopy was normal or there was only visual evidence of gastric or duodenal mucosal lesions (gastritis or non-erosive duodenitis) and others (e.g. polyps). Gastritis was defined as visual evidence of erythema, petechiae or erosions. Non-erosive duodenitis was visual evidence of erythema in the absence of erosions.

The groups were then compared according to sex, age and race. The main Malaysian ethnic groups of Malays, Chinese and Indians were studied. Other ethnic groups comprised only 22 patients and were excluded from the racial comparison. Chisquare, with Yates correction when necessary, was used to compare the racial composition of the peptic ulcer and non-ulcer dyspepsia groups, as well as the frequency of normal endoscopies between males and females.

## Results

### Endoscopic findings are summarised in Table I and Fig. I

Of the 1119 endoscopies, the findings were normal in 562 (50%). Of the remainder, peptic ulcer (21%) was the commonest finding followed by gastritis or non-erosive duodenitis (20%).

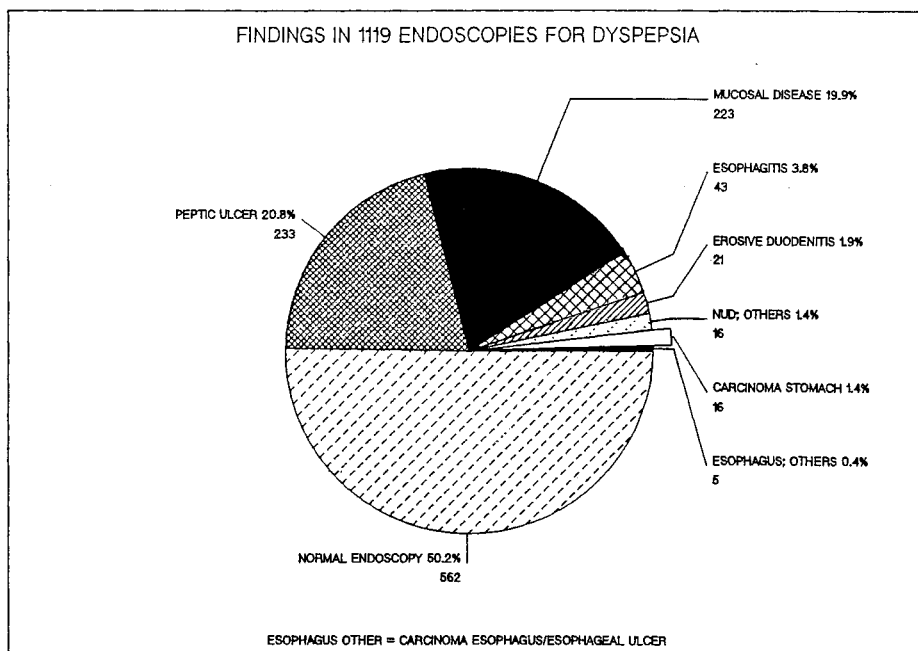


Fig. 1

The EOD group numbered 318 (28%) whilst the NUD group totalled 801 (72%). Normal endoscopies were commoner in female patients than in males (62% versus 40%) ( $p < 0.001$ ). Males had an almost twice higher prevalence of EOD than females (37% versus 19%). The gastric ulcer (GU) to duodenal ulcer (DU) ratio was 0.9. The male to female ratio of GU and DU was 1.5 and 2.9 respectively.

Gastric carcinoma was found in 16 patients (1.4%). Their mean age was 60.3 years (range: 38 to 81 years). All but two, of the patients were males. The racial breakdown was 10 Chinese, four Malays and two Indians.

Table I  
Findings in 1119 endoscopies for dyspepsia

	Males (N = 588)		Females (N = 531)	
	No.	%	No.	%
Gastric ulcer (GU)	61	} ( 27)	41	} (140)
Duodenal ulcer (DU)	83		29	
GU + DU	15		4	
Erosive duodenitis	16	( 3)	5	( 1)
Carcinoma stomach	14	( 2)	2	(<1)
Carcinoma esophagus	0	( 0)	1	(<1)
Esophagitis	29	( 5)	14	( 3)
Esophageal ulcer	2	(<10)	2	(<1)
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TOTAL FOR ENDOSCOPICALLY DIAGNOSED 'ORGANIC' DYSPEPSIA	220	( 37)	98	( 19)
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Normal endoscopy	233	( 40)	329	( 62)
Visual evidence of gastric or duodenal mucosal disease	126	( 21)	97	( 18)
Others	9	( 2)	7	( 1)
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TOTAL FOR NON-ULCER DYSPEPSIA	368	( 63)	433	( 81)
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TOTAL ENDOSCOPIES	588	(100)	531	(100)
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Percentages have been rounded to the nearest 1%.

### Non ulcer dyspepsia and peptic ulcer disease by age and sex

In both sexes, with increasing age, there was a steady decrease in the frequency of NUD. Whereas 90 percent of males below the age of 19 had NUD, this decreased to 39 percent in those aged 70 and above. Similarly 96 percent of females below 29 years had NUD, and this decreased to 46 percent in those aged 70 and above. Females had a higher frequency of NUD in every age group. (Figs. 2 and 3)

In contrast, the frequency of peptic ulcer in both sexes increased with age until a peak was reached in the age group 60 – 69 (males) and 50 – 69 (females). For peptic ulcer, males had a higher frequency at every age group, except for those aged 70 and above.

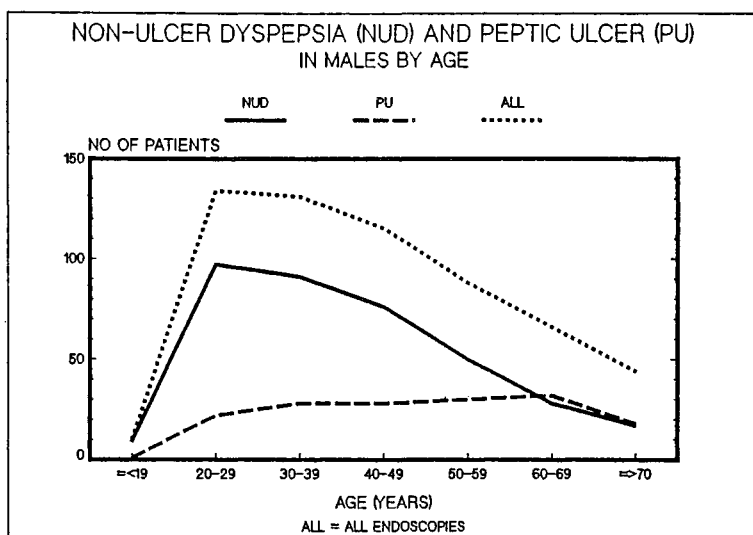


Fig. 2

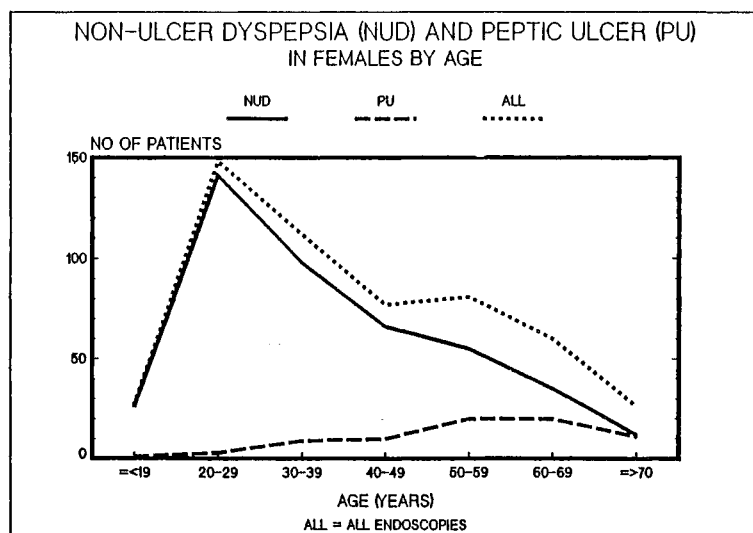


Fig 3

**Table II**  
**Racial composition of non-ulcer dyspepsia and peptic ulcer patients**

Race	All		NUD		GU		DU	
	Endoscopies		No.	%	No.	%	No.	%
	No.	%						
<b>Male</b>								
Chinese	187	( 32)	103	( 28)	32	( 42)	38	( 40)
Indians	156	( 27)	102	( 28)	17	( 22)	27	( 28)
Malays	234	( 41)	161	( 44)	27	( 36)	31	( 32)
<b>TOTAL</b>	<b>577</b>	<b>(100)</b>	<b>366</b>	<b>(100)</b>	<b>76</b>	<b>(100)</b>	<b>96</b>	<b>(100)</b>
<b>Female</b>								
Chinese	211	( 41)	158	( 37)	24	( 57)	21	( 66)
Indians	104	( 20)	93	( 22)	3	( 7)	6	( 19)
Malays	205	( 39)	179	( 41)	15	( 36)	5	(15)
<b>TOTAL</b>	<b>520</b>	<b>(100)</b>	<b>430</b>	<b>(100)</b>	<b>42</b>	<b>(100)</b>	<b>32</b>	<b>(100)</b>

Other ethnic groups comprising 22 patients are excluded. Nineteen patients had both GU and DU.

NUD : Non-ulcer dyspepsia, GU : Gastric ulcer, DU : Duodenal ulcer

NUD vs GU :  $P < 0.05$  (males);  $P < 0.01$  (females)

NUD vs DU :  $P < 0.05$  (males);  $P < 0.003$  (females)

### Non ulcer dyspepsia and peptic ulcer disease by race

There was a significant difference in the racial composition of non-ulcer dyspepsia patients compared to both gastric and duodenal ulcer patients. Of the three races, more Chinese males and females had GU and DU as compared to NUD. Chinese males comprised 42, 40 and 28 percent of GU, DU and NUD patients respectively. Similarly Chinese females comprised 57, 66 and 37 percent of GU, DU and NUD patients respectively. (Table II)

### Discussion

There is as yet no agreement on the definition or classification of dyspepsia.<sup>1</sup> We define dyspepsia in the broadest way to encompass the whole range of symptomatic upper gastrointestinal disease. We proceeded then to divide dyspepsia into endoscopically diagnosed 'organic' dyspepsia and non-ulcer dyspepsia. The former is due to lesions which have been well defined and for which definitive modalities of therapy are available. Hence these lesions should be detected early and treated accordingly. Failure to treat patients with organic dyspepsia might result in progression of the disease with complications. On the other hand, there is as yet no agreement on the classification and management of non-ulcer dyspepsia. This entity is usually taken to include gastritis and duodenitis. Prevalence rates of gastritis among dyspeptics has been reported to be similar to that in the general population.<sup>5, 6</sup> There is disagreement as to whether duodenitis is a component of duodenal ulcer disease although there are some suggestions that it might be, especially in the presence of erosions.<sup>7</sup> Therefore we decided to include erosive

duodenitis as a separate category within 'organic' dyspepsia, and not as part of peptic ulcer disease.

It must be emphasised that there are many organic diseases which present with dyspepsia but cannot be diagnosed by upper gastrointestinal endoscopy. These would be considered as non-ulcer dyspepsia in our classification. These organic diseases include gallbladder, liver, pancreatic, small intestinal or even colonic disease. Hence in any patient with NUD, depending on their symptoms, appropriate investigations like ultrasonography, endoscopic retrograde cholangio-pancreaticogram, colonoscopy and small bowel series, should be carried out to exclude these organic lesions. Thus, it must be reiterated that endoscopy is only the first line of investigation in NUD. The causes of NUD in patients without organic disease remains poorly understood. Several mechanisms have been postulated including antral hypomotility,<sup>8</sup> Campylobacter pylori infection,<sup>9</sup> duodeno-gastric reflux, food allergy<sup>10</sup> and psychological factors.<sup>11</sup>

In our study the percentage of patients having no abnormalities on endoscopy was 50 percent. This is in agreement with other studies. The proportion of patients with no abnormalities has remained between 30 percent and 55 percent, even with the advent of endoscopies which can detect mucosal lesions.<sup>12</sup> One in five patients had peptic ulcer, the frequency of which increased with age. Males and Chinese in particular, seem to have a higher frequency of peptic ulcer. Visual evidence of gastric or duodenal disease (excluding erosive duodenitis) was noted in a fifth of our patients (20 percent). It must be pointed out that the diagnosis of gastritis and non-erosive duodenitis is dependent on the endoscopists perception of "redness" and is subject to inter as well as intra-observer variations. To reduce this observer variations, almost all the endoscopies were performed or supervised by the two authors. Similar rates of gastritis and duodenitis have been reported by several others. Gear and Barnes reported mucosal lesions in 19.4%,<sup>13</sup> Saunders et al in 18%<sup>14</sup> and Holdstock in 20%,<sup>15</sup> of dyspeptic patients. However it should be noted that endoscopic gastritis does not correlate with histological gastritis, and our findings only refer to the former.

Females had a higher frequency of normal endoscopies and non-ulcer dyspepsia. Gear et al noted similar findings.<sup>16</sup> Less than 12 percent of females below the age of 40 had evidence of organic dyspepsia. The younger the patient the lower the prevalence of organic dyspepsia.<sup>17</sup> The increase in the frequency of endoscopically diagnosed organic dyspepsia with age is accounted for by both peptic ulcer and carcinoma.

Chinese have been reported to have a higher prevalence of peptic ulcer.<sup>18</sup> This was also noted in our study. Of the three races (Malays, Chinese and Indians), the Chinese (of both sexes) were found to have a higher prevalence of peptic ulcer than non-ulcer dyspepsia. This was true for both gastric as well as duodenal ulcers. There are no ethnic differences in gastric acid secretion in both normals and ulcer patients.<sup>19</sup> Mucosal resistance and environmental factors may play a role.

## Conclusion

Our study shows that upper gastrointestinal endoscopy is useful as an initial diagnostic tool in dyspepsia. Based on our findings, the chances of detecting organic lesions on endoscopy in younger patients, particularly females below 40 years of age, is low. Further studies need to be done to better delineate the different diagnostic categories of non-ulcer dyspepsia.

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