

# Findings among patients referred for endoscopy in Brunei Darussalam with special reference to dyspepsia

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## Abstract

Dyspepsia is a frequent gastrointestinal complaint and a common reason for endoscopy. This study assessed the spectrum of findings among patients referred for endoscopy, particularly those with dyspepsia. All patients referred for endoscopy (n = 2,066) for the first time over a two year period in at RIPAS hospital in Brunei Darussalam were retrospectively reviewed. Dyspepsia represented the commonest indication (53.3%). Patients with dyspepsia were younger compared to the non-dyspepsia group ( $44 \pm 16.1$  vs.  $50.3 \pm 18.7$  years old,  $P < 0.001$ ). The commonest findings were gastritis/duodenitis (41.8%), normal findings (26.9%), peptic ulcer disease (9.9%) and isolated oesophagitis (6.4%). Malignancies accounted for 0.8% (gastric, n = 8 and oesophagus, n = 1). The prevalence of *Helicobacter Pylori* (*H. pylori*) infection among this group was 27.5% being higher in male patients ( $P < 0.001$ ). Among all indications, the *H. pylori* prevalence was 26.2%, also higher in male patients ( $P < 0.001$ ). Sixty-four percent of patients with peptic ulcer disease did not have dyspepsia as the main complaint. Prevalence of *H. pylori* among peptic ulcer disease were lower than expected; duodenal ulcer (45%), gastric ulcer (40.0%) and gastric/duodenal ulcers (33.3%). Overall, malignancies were detected in 1.3% (oesophagus, n = 5, and stomach, n = 21 [adenocarcinoma, n = 19 and lymphoma, n = 2]). Sixty-two percent of gastric malignancies (n = 13/21) did not have dyspepsia as a main complaint. However, all had warning symptoms. In conclusion, endoscopic findings among Bruneian patients with dyspepsia are comparable to published findings. However, only a third of gastric malignancies had dyspepsia. The prevalence rates of *H. pylori* among those with peptic ulcer diseases are lower than expected, probably due to overall declining prevalence of this infection.

**Keywords:** Brunei, dyspepsia, endoscopy, *Helicobacter pylori*, peptic ulcer disease

## 1. Introduction

Dyspepsia is one of the commonest gastrointestinal (GI) complaints encountered in the daily clinical practice and represents a significant burden on the health care system [1-3]. This occurs despite a large proportion of patients with dyspepsia that self-medicate and do not present for evaluations [4]. Endoscopy is an important tool in the evaluation of dyspepsia and is recommended, particularly for those patients who are over the age of 45 with new onset symptoms, non-response to empiric therapies or pres-

ence of warning symptoms [5-7]. Endoscopy is the most effective investigation as it allows direct visualisation of the upper GI tract, sampling and testing for *Helicobacter pylori* infection and also permits therapies to be instituted if required, particularly for GI bleeding.

It is useful to have the background knowledge of the spectrum of findings amongst this group of patient as published data is scarce. This will greatly help in assessing which patients are likely to need endoscopy or require urgent endoscopy as the number of referred cases is likely to increase. The knowledge will also make a change in the spectrum of findings to be detected as the spectrum of gastrointestinal disorders changes, particularly with the declining prevalence of *H. pylori* infection. The aim of the present study was to characterize the findings amongst patients referred for endoscopy, particularly those with dyspepsia.

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## 2. Methods

### 2.1 Setting

The Endoscopy Unit in the local setting, is the main unit that provides endoscopic services to three (Brunei-Muara, Tutong and Temburong districts) of the four districts in Negara Brunei Darussalam. The other district (Kuala Belait) has a small unit within in the district general hospital. The Endoscopy Unit serves a population of approximately 294,400. The unit has an open access referral systems for upper GI endoscopy and lists are performed daily in the morning. The waiting time for endoscopy averages two to three days.

### 2.2 Procedures

Endoscopy was carried as per normal routine with topical anaesthesia. We only use intravenous sedations if patients requested or patients were very anxiously and likely to undergo repeat procedures. During the procedure, we routinely obtain antral or body biopsies for *H. pylori* testing with either rapid urease test (*CLOTest*, Delta West Ltd, Bentley, West Australia) or histology (Half Gram stain) or both. A positive test was taken as either test or both test being positive.

### 2.3 Patients

All patients who had undergone endoscopy over a twenty four months period (January 2003 to December 2004) were identified from the endoscopic register. During this two years period, there were 2,530 upper GI endoscopies performed. Repeat endoscopies or patients who previously had endoscopy or incomplete/missing records were excluded. Only patients who had undergone endoscopy for all indications for the first time ( $n = 2,066$ ) were evaluated.

### 2.4 Definitions

Dyspepsia was taken as any abdominal discomfort that is centred in the epigastrium. All subtypes of dyspepsia such as 'ulcer like', 'heartburn like' or 'dysmotility like' were categorized as one. Gastroesophageal reflux was tak-

en as any retrosternal burning chest pain with or without radiation up ward or regurgitation.

Findings were considered significant if they were; peptic ulcer disease (PUD) either active or healed, presence of bleeding, neoplasms (benign or malignant), portal hypertension related findings, significant reflux oesophagitis (Los Angeles Classification grade C and D, shown in Table 1 [8], vascular malformations or infections related pathologies such as *Candidiasis*.

**Table 1.** Los Angeles classification for endoscopic reflux oesophagitis (LA Classification)

Grades	Definition
A	One mucosal break less than 5 mm in length
B	One or more mucosal break more than 5 mm in lengths
C	Mucosal breaks that cover up to less than 75% of the circumference
D	Complicated reflux oesophagitis (> 75% circumference/ ulceration/stricture)

### 2.5 Statistics

Data were coded and entered into the SPSS (SPSS Version 10.0, Chicago, IL, USA) for analysis. The Chi-squared or Fisher's Exact tests were used for categorical variables. The Student's *t*-test and ANOVA were used for comparisons of continuous variables. Findings were considered significant for *p* values < 0.05.

## 3. Results

During this period, dyspepsia represents the commonest indication for referral for endoscopy accounting for 53.3% of all procedures. The indications for endoscopy are shown in Table 2.

**Table 2.** Indications for endoscopy (n = 2,066)

Indications	n (%)
Dyspepsia	1,101 (53.3)
Gastrointestinal bleeding	263 (12.7)
Evaluation of anaemia	263 (12.7)
Heartburn	166 (8.0)
Vomiting	67 (3.2)
Dysphagia	41 (1.9)
Weight loss	33 (1.6)
Loss of appetite	19 (0.9)
Others	120 (5.8)

### 3.1 Patients with dyspepsia

The mean age of patients with dyspepsia was  $44.6 \pm$

16.1 years. There was no difference between the genders (male: female,  $45.5 \pm 16.0$  vs.  $43.8 \pm 16.3$  yrs old,  $p = 0.072$ ). The commonest findings encountered were; gastritis/duodenitis (41.8%), oesophagitis/gastritis/duodenitis (10.8%), PUD (9.9%) and isolated oesophagitis (6.4%). Endoscopy was normal in 26.9%.

Significantly more male patients had more significant findings and *H. pylori* infection (33.2% vs. 22.2%,  $p < 0.001$ ). These significant findings were reflux oesophagitis (21.6% vs. 13.0%,  $p < 0.001$ ) and PUD (13.1% vs. 6.8%,  $p < 0.001$ ). Female had significantly more normal findings (34.8% vs. 18.5%,  $p < 0.001$ ). All three cases of Barrett's detected were in male patients.

The dyspepsia group was significantly younger and there were more expatriate population. Demographic of patients with dyspepsia is shown in Table 3.

**Table 3.** Demographic of patients with dyspepsia compared to other indications

	Dyspepsia (n = 1,101)	Non-dyspepsia (n = 965)	P value
Age (yrs)	$44.6 \pm 16.1$	$50.3 \pm 18.7$	<0.001
Gender			
<i>Male</i>	540 (49.1)	476 (49.3)	ns
Race			
<i>Malay</i>	782 (71.0)	739 (76.6)	ns
<i>Chinese</i>	135 (12.3)	126 (13.1)	ns
<i>Indigenous</i>	43 (3.9)	33 (3.4)	ns
<i>Others</i>	141 (12.8)	67 (7.0)	< 0.05

Age expressed in mean and standard deviation

Gender and ethnic breakdown expressed in absolute and percentage (bracket)

ns: non significant ( $P > 0.05$ )

The spectrum of endoscopic findings is shown in Table 4.

**Table 4.** Endoscopic findings among patients with or without dyspepsia

	Dyspepsia (n = 1,101) n (%)	Non-dyspepsia (n = 965) n (%)	Overall (n = 2,066) n (%)
<i>Findings</i>			
Normal	296 (26.9)	210 (21.8)	506 (24.5)
Gastritis/Duodenitis	579 (52.6)	402 (41.6)	981 (47.5)
Oesophagitis	210 (19.1)	187 (19.4)	397 (19.2)
<i>Grade A/B</i>	204 (18.5)	172 (17.8)	376 (18.2)
<i>Grade C/D</i>	6 (0.5)	15 (1.6)	21 (1.0)
Peptic ulcer disease	110 (9.9)	196 (20.3)	305 (14.8)
<i>GU</i>	27 (2.5)	72 (7.4)	99 (4.8)
<i>DU</i>	72 (6.5)	100 (10.4)	172 (8.3)
<i>DU/GU</i>	11 (1.0)	24 (2.5)	35 (1.7)
Malignancies	9 (0.8)	17 (1.8)	26 (1.3)
<i>Oesophageal</i>	1 (0.1)	4 (0.4)	5 (0.2)
<i>Gastric</i>	8 (0.7)	13 (1.4)	21 (1.0)

GU: Gastric ulcer, DU; Duodenal ulcer

Oesophagitis based on LA classification: Grade A/B (mild) and Grade C/D (severe)

The prevalence of *H. pylori* infection amongst this group was 28.1%. Male patients had higher incidence of significant findings ( $p < 0.001$ ) and *H. pylori* infection rates ( $p < 0.001$ ). The prevalence of *H. pylori* infection was significantly less in the older age group ( $> 40$  yrs, 31.4% vs. 25.3%,  $p = 0.032$ ). Overall significant findings were seen in 13.7% with a trend towards significance in the  $> 40$  years old group (11.9% vs. 16.1%,  $p = 0.054$ ).

### 3.2 Overall indications

Among all indications, the *H. pylori* prevalence was 26.2%. This was significantly higher in male patients. Overall, there were 306 patients (14.7%) with evidence of peptic ulcer diseases. However, 64% ( $n = 196$ ) of patients with endoscopic evidence of PUD did not have dyspepsia listed as the main complaint. The main presentations of patients with endoscopic evidence of PUD listed in the request are shown in Table 5.

**Table 5.** Main presentations of patients with endoscopic peptic ulcer diseases (n = 306)

	GU (n = 99) n (%)	DU (n = 172) n (%)	GU/DU(n = 35) n (%)
Dyspepsia	27 (27.3)	72 (41.9)	11 (31.4)
Evaluation of anaemia	25 (25.2)	17 (9.9)	5 (14.3)
Gastrointestinal bleeding	36 (36.4)	66 (38.4)	18 (51.4)
Reflux symptoms	3 (3.0)	4 (2.3)	0 (0)
Loss of appetite	0 (0)	2 (1.2)	0 (0)
Weight loss	1 (1.0)	4 (2.3)	0 (0)
Vomiting	1 (1.0)	2 (1.2)	0 (0)
Dysphagia	3 (3.0)	0 (0)	0 (0)
Others	3 (3.0)	5 (2.9)	1 (2.9)

GU: Gastric ulcer, DU; Duodenal ulcer

Off the patients with PUD, only 216 (70.5%) had *H. pylori* testing done at initial endoscopy. The prevalence rates of *H. pylori* among PUD were; GU 40% (n = 24/60), DU 45% (n = 61/135) and GU/DU 33.3% (n = 7/21).

Overall, malignancies were detected in 26 patients (oe-

sophagus [n = 5], and stomach [n = 21; adenocarcinoma [n = 19] and lymphoma [n = two]). Two patients were younger than 45 years old. Eighty percent with oesophageal carcinoma presented with dysphagia. Sixty-two percent of patients with gastric malignancies did not have dyspepsia as a main complaint. However, all had warning features at presentations. Patients' details are shown in Table 6.

**Table 6.** Details of patients with malignancies

	Oesophageal (n = 5) n (%)	Gastric (n = 21) n (%)
Median Age (yrs) **	66 (54-86)	67 (32-83)
Male	2 (40)	15 (68.2)
Indication for endoscopy		
<i>Dysphagia</i>	4 (80)	0 (0)
<i>Dyspepsia</i>	1 (20)	8 (38.1)
<i>Anaemia/blood loss</i>	0 (0)	6 (28.6)
<i>Gastrointestinal bleed</i>	0 (0)	2 (9.5)
<i>Loss of weight</i>	0 (0)	2 (9.5)
<i>Loss of appetite</i>	0 (0)	1 (4.8)
<i>Others</i>	0 (0)	2 (9.5) *

\* Evaluation of liver metastasis (n = 1) and epigastric mass (n = 1)

\*\* Age expressed in median and range due to small number of patients

## Discussion

In the Brunei setting, dyspepsia represented the most common indication for endoscopy and the spectrums of findings are comparable to published findings [9, 10]. Majority of the findings consisted mainly of non-specific gastritis and duodenitis. No abnormal finding was seen in 26.9% of procedures. These findings, approximately 72% represented the subset of patients who will be categorized as non-ulcer dyspepsia or functional dyspepsia [11]. The overall spectrum of indications for referral for endoscopy is also comparable to other endoscopic studies. Importantly, the overall ethnic breakdown of the patients is consistent with the national breakdown and hence the results obtained can be assumed to be representative of the population.

Patient with dyspepsia were significantly younger than their non-dyspepsia counterpart. There were also significantly more expatriates in the dyspepsia group. One possible reason for this is that the expatriate group is usually of reasonable health and unlikely to have any significant health problems. They would have had compulsory medical screening before being employed. Furthermore, those with significant medical problems were likely to have had their investigations and treatment back in their homeland. Endoscopic reflux oesophagitis is also very common among Bruneian patients with dyspepsia (19.2%). However majority were mild consisting of LA grade A and B oesophagitis. Interestingly, this is more than the findings of a questionnaire study done locally where the prevalence of reflux disorders among control was reported to be 9.5% [12]. This suggests that a proportion of these patients were only mildly symptomatic or asymptomatic with their gastro-oesophageal reflux disorders.

The main aim of endoscopy is to assess for significant causes of dyspepsia such as peptic ulcer diseases, malignancies, portal hypertension related or significant reflux diseases (LA classification grade C and D). This was seen in approximately 15% of patients. Duodenal ulcers were more common than gastric ulcer. Dyspepsia, anaemia and suspected gastrointestinal bleeding accounted for majority of indications among those found to have PUD. However, the study also showed that a small proportion of those with PUD had unexpected indications such as dys-

phagia. An important finding is that only a third of patients with PUD had dyspepsia as their main complaint, indicating that a large proportion were at risk of adverse PUD events without any typical symptoms. They may present with complications of PUD such as gastrointestinal bleeding, perforation or gastric outlet obstruction. Fortunately, complicated PUD is uncommon. The large proportion of PUD patients not experiencing any dyspepsia may be due to use of NSAIDs or anti-platelets agents. These medications are known to induce ulcerations without much clinical symptoms. Unfortunately, we were not able to assess this correlation as the data on their use were not routinely recorded in the endoscopic sheet.

Malignancies, which is the most important aspect of endoscopy evaluation accounted for only 1.3% of the overall findings. Similar to those of PUD, a large proportion of patients with underlying malignancies also did not have dyspepsia as the main complaint. However, all the patients had warning symptoms at presentations. New onset dyspepsia, presence of anaemia or weight loss was the commonest indication among this group. Studies have shown that presence or absence of alarm symptoms have poor correlations with malignancies [13-15]. Unfortunately most had advanced disease at diagnosis making curative therapy less possible. Only two patients in this study were younger than the age of 45 years old, the age currently taken as a cut off for referral for endoscopy. Hence following the international recommendations, trial of therapy among those under the age of 45 years old without any warning symptoms would have missed these two patients. The age threshold for referral for endoscopy continued to be debated [16-19]. Some have recommended the cut off age for uncomplicated dyspepsia for endoscopy to be increased to 55 years old. However, the age of prompt endoscopy also depends on the local incidence of upper gastrointestinal malignancies [14, 20]. PUD and *H. pylori* infection are still common in our local setting and it is important to identify such cases early and managed appropriately to avoid possible future complications. Hence we routinely offer endoscopy to all patients.

The prevalence of *H. pylori* infection is lower than previously reported. However, consistent with recent reports [21, 22], there is a declining trend of overall *H. pylori* infection and also among those with PUD. This has also been

attributed to increasing use of NSAIDs. These findings are important as we need to assess for other causes of PUD, particularly use of NSAIDs and anti-platelets agents that patients may have taken without informing their doctors. Another explanation for the lower prevalence of *H. pylori* may be due to the fact that rapid urease tests were mostly used for detection. It is known that sensitivity and specificity of rapid urease tests can be poor [23].

In conclusion, the spectrum of findings among patients with dyspepsia referred for endoscopy is consistent with published reports. A large proportion of patients with significant pathologies such as PUD and malignancies did not complaint of dyspepsia. However, all had warning features at presentations.

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