

## Evaluation of 105 Cases of Dyspepsia by Upper Gastrointestinal Endoscopy and Ultrasonography of Hepatobiliary System in a Rural Setting

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### Abstract

**Introduction:** Dyspepsia affects up to 40% of the general population and significantly reduces the quality of life. Dyspeptic symptoms may be associated with endoscopically negative conditions, such as functional dyspepsia, or with organic lesions like peptic ulcer and oesophagitis which are easily detected by endoscopy. On the other hand, such lesions may also be asymptomatic and there is not always a clear cause and effect relationship between endoscopic findings and symptoms.

**Objective:** To determine the prevalence of significant endoscopic lesion and or ultrasonographic findings and their association with dyspeptic symptoms in Bangladeshi rural population.

**Materials and Methods:** This prospective cross sectional study was carried out in Nov 2015 to Dec 2015 in a field mobile hospital of Bangladesh Army, established in Daudkandi, Comilla where total 1094 uninvestigated dyspeptic patients were invited to participate in this cross sectional study and 105 typical dyspeptic patients were finally recruited as per Rome III criteria. Participants underwent clinical assessment through a preformed structured questionnaire and non video upper gastrointestinal endoscopy (UGIE) and ultrasonogram (USG) of hepatobiliary system (HBS).

**Results:** The mean age of 105 participants (male-29; female-76) studied was 36.51±7.26 years with female preponderance (72.38%). Predominant symptoms were epigastric pain (69.52%), flatulence (34.28%), heart burn (28.57%) and diffuse abdominal pain (22.85%). Regarding treatment 48(45.71%) patients

took proton pump inhibitors (PPI), 24 patients (22.85%) took H<sub>2</sub> receptor blocker and 13 patients (12.38%) were on antacids irregularly. Seventeen patients (16.15%) had no history of medications for dyspepsia. Most of the patients (76.19%) had symptoms of less than 5 years. Organic dyspepsia was found in 68(64.76%) and functional dyspepsia in 37(35.23%) participants. Percentage of functional dyspepsia in male was 24.13% and in female it was 39.47% and the difference was statistically significant (p<0.05). In the organic dyspepsia group, upper GI endoscopy revealed 07(6.66%) duodenal ulcer, 02(1.9%) gastric ulcer, 04(3.8%) prepyloric ulcer and other inflammatory lesions like prepyloric gastritis in 46(43.80%) patients, antral gastritis in 06(5.7%) patients, duodenitis in 08(7.61%) patients and erosive oesophagitis in 03 patients(2.86%). Further USG revealed cholelithiasis in 02(1.90%) and gall bladder (GB) polyp in 01(0.95%) participants which could be the reason for their dyspeptic symptoms. Thirty Seven (35.23%) participants had normal UGIE (and also normal USG of HBS) but they had significant dyspeptic symptoms.

**Conclusion:** Most of the patients (64.76%) in this study had significant upper GI endoscopic findings and labeled as organic dyspepsia and combined use of upper GI endoscopy and USG of HBS provided better yield for aetiological diagnosis of dyspepsia if there is any.

**Key-words:** Dyspepsia, Peptic Ulcer, Oesophagitis, Ultrasonogram (USG) of Hepatobiliary System (HBS), Upper Gastrointestinal Endoscopy (UGIE).

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## Introduction

Dyspepsia encompasses a constellation of upper abdominal symptoms affecting up to 40% of the general population each year and about 10% of those affected seek medical care<sup>1</sup>. As per Rome III

dyspepsia is defined as one or more of the following three symptoms for three months within initial six months of symptoms onset: (a). Post prandial fullness, (b). Early satiety, (c). Epigastric pain or burning. The extensive differential diagnosis of dyspepsia and its heterogeneous pathophysiology still presenting challenge for the clinicians to diagnose and treat the disease rationally and economically. Thus the use of endoscopy in the management of dyspepsia remains a controversial issue worldwide<sup>3</sup>. The aim of this study was to determine the prevalence of significant endoscopic lesion and or ultrasonographic findings and their association with dyspeptic symptoms in uninvestigated Bangladeshi rural population.

## Materials and Methods

After getting the due approval of ethical committee of Directorate General of Medical Services (DGMS) of Bangladesh Armed Forces, this prospective cross sectional study was carried out in outpatient department (OPD) of a field mobile hospital of Bangladesh army established in Daudkandi rural area as part of their 'winter collective exercise' during the period of November 2015 to December 2016. For pacification purpose this hospital remained open for emergency and outdoor management of local rural people. On an average this hospital dealt 900-1200 patients of different variety per day. Amongst them 70-90 dyspeptic patients irrespective of age and sex were isolated per day for 14 days. They were invited to report on a fixed date (12 Jan 2016) for further evaluation. Total 1094 patients reported on scheduled date and after preliminary screening by Rome III criteria 105 patients were selected for final analysis. Patients with systemic decompensated disease, major psychiatric disorders, impediment to endoscopy, previously documented upper gastro-intestinal tract (GIT) lesion, significant upper abdominal findings like hepatosplenomegaly or any mass in abdomen were excluded from the study. After taking informed written consent, thorough history and findings of physical examination

were documented in a preformed validated dyspepsia data sheet. Then all of them underwent non-video upper gastrointestinal endoscopy (UGIE) by two gastroenterologists and ultrasonography (USG) of hepatobiliary system (HBS) by a radiologist.

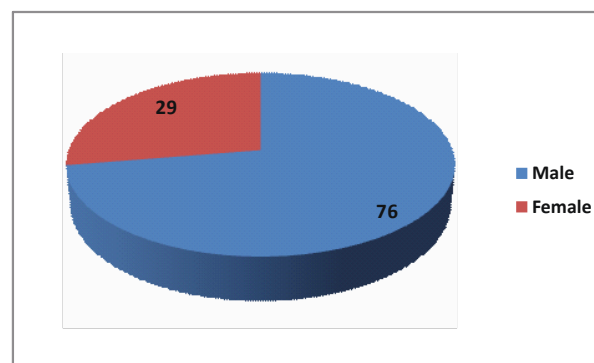
The data from the patients were registered, tabulated and statistically analyzed using the statistical package for social sciences (SPSS) programme version 17.0 to calculate frequencies and the  $\chi^2$  test. P value was taken as significant at a level less than 0.05.

## Results

A total of one hundred and five dyspeptic patients were included for final assessment. Most of the patients (72.38%) were female and the mean age of the patient was  $36.51 \pm 7.26$  years and most (33.33%) were in the age group of 30-40 years with a range of 16 – 69 years (Table-I).

**Table-I:** Age and sex distribution (n=105)

Sex		No of patient	Percentage
	Male	29	27.62
Female	76	72.38	
Age group (years)	16-30	27	25.71
	30-40	35	33.33
	40-50	34	32.38
	50-60	8	7.62
	60-70	1	0.95



**Fig-1:** Sex distribution of the patient (n=105)

Predominant symptoms were epigastric pain (69.52%), flatulency (34.28%), heart burn (28.57%) diffuse abdominal pain (22.85%) and anorexia (19.04%) (Table-II).

**Table-II:** Clinical features (overlapping) (n=105)

symptoms	No of patients	Percentage
epigastric pain	73	69.52
flatulency	36	34.28
heart burn	30	28.57
abdominal pain (other than epigastrium)	24	22.85
anorexia	20	19.04
chest pain	17	16.19
acid eructation	15	14.28
indigestion	22	20.95
heartburn	16	15.23
nausea/vomiting	14	13.33
back pain	13	12.38
constipation	11	10.47
insomnia	5	4.76
chronic loose motion	4	3.80
locking sensation in throat	3	2.85
halitosis	3	2.85

Duration of symptoms ranged from 03 months to more than 15 years and 80 patients (76.19%) had symptoms between 03 months to 05 years (Table-III).

**Table-III:** Duration of symptoms (n=105)

Duration	No. of patients	Percentage
3 months-5 yrs	80	76.19
5-10 yrs	18	17.14
10-15 yrs	05	4.76
>15 yrs	02	1.90

Suspected contributing factors for dyspeptic symptoms as revealed on query were betel leaf and nut (44.76%), smoking (33.33%), nonsteroidal anti-inflammatory drugs (NSAIDs) (20.45%) and psychological stress (11.42%) (Table-IV).

**Table-IV:** Suspected contributing factors (n=105)

Factors	No. of patients	Percentage
NSAIDs	22	20.95
Betel leaf and nut	47	44.76
Smoking	35	33.33
Family stress	12	11.42
Alcohol	01	0.95

Regarding treatment 48 patients (45.71%) took proton pump inhibitors (PPI), 24 patients took H<sub>2</sub> receptor blocker and 13 patients (12.38%) were on antacids irregularly. 17 Patients (16.15%) had no history of medications for dyspepsia (Table-V).

**Table-V:** Medication history (n=105)

Drugs	No. of patients	%
Proton pump inhibitors (PPI)	48	45.71
H <sub>2</sub> receptor blocker	24	22.85
Antacid	13	12.38
No anti-ulcer agents	17	16.19

Upper GI endoscopy revealed predominantly inflammatory lesions of GIT e.g. prepyloric gastritis 43.82%, duodenitis 7.61% and antral gastritis 5.70%. Duodenal ulcer was found in 6.66% patients whereas 1.90% patients had gastric ulcer. No case of gastric or oesophageal carcinoma or hiatus hernia was detected. Total 37 patients (35.23%) had normal endoscopic study (Table-VI).

**Table-VI:** Endoscopic findings (n=105) (overlapping)

Findings	No. of patients	(%)
Prepyloric gastritis (mild+moderate+severe)	35+10+1=46	43.8
Duodenitis (mild+moderate)	7+1=8	7.61
Duodenal ulcer	07	6.66
Antral gastritis (mild+moderate+severe)	4+1+1=6	5.70
Prepyloric ulcer	04	3.80
Gastric ulcer(mild+moderate)	1+1=2	1.90
Erosive oesophagitis	03	2.86
Gastric polyp	01	0.95
Pale mucosa	03	2.86
Normal study	37	35.2

USG of HBS detected cholelithiasis in 02 patients (1.90%), gall bladder (GB) polyp in 01 patient (0.95%) and fatty liver in 10 patients (9.25%), cystic SOL in liver in 01 patient (0.95%). But incidentally these patients also had organic GI lesions as found by endoscopy. Total ninety patients (85.71%) had normal USG findings (Table-VII).

**Table-VII:** Findings of USG of HBS (n=105)

Findings	No. of patients	Percentage
Cholelithiasis	02	1.90
Fatty liver	10	9.52
GB polyp	01	0.95
Cystic SOL in liver	01	0.95
Thickened pylorus	01	0.95
Normal study	90	85.71

Organic dyspepsia was observed in 68 patients (64.76%) and functional dyspepsia in 37 patients (35.23%). Organic dyspepsia predominates both in male (20.95%) and female group (43.80%) but the difference of prevalence of functional dyspepsia between male and female was statistically significant (p<0.05) (Table-VIII).

**Table-VIII:** Sex distribution of functional and organic dyspepsia

Sex	Organic dyspepsia	Functional dyspepsia	% of functional dyspepsia
Male	22(20.95%)	07(6.66%)	24.13
Female	46(43.80%)	30(28.57%)	39.47
Total	68(64.76%)	37(35.23%)	

## Discussion

In this study only the uninvestigated dyspeptic patients were included following the Rome III criteria. Epigastric or abdominal pain and heart burn has been reported<sup>4,5</sup> to be the predominant symptom followed by other symptoms like flatulence, nausea etc. in conformity with frequency of symptoms in this study. Until recently chronic peptic ulcer diseases was almost exclusively due to *H. pylori* infection with up to 90% of duodenal ulcers and 70% of gastric ulcer attributed to this bacterium<sup>6</sup>. However NSAIDs and aspirin are now responsible for most ulcer disease on developed countries<sup>7</sup>. In this study other than NSAIDs, betel leaf and nut and smoking found to be more culpable as the patients were mainly from rural origin of a developing country where most of the medications are available over the counter (OTC).

Symptoms of dyspepsia do not reliably identify individuals with malignancy or other pathology. Therefore, patient's age and alarm features<sup>8</sup> have been used to categorize patients with dyspepsia who may harbor true pathology that may be found with endoscopy or other examinations<sup>9</sup>.

Dyspeptic patients younger than 50 years of age and without alarm features are commonly evaluated by 1 of 3 methods (1) Noninvasive testing for *H. pylori* with subsequent treatment if positive (the test and treat approach) (2) An empiric trial of acid suppression or (3) Initial endoscopy.

A Cochrane review found that in the absence of warning signs for serious disease, a test and treat strategy is effective and cheaper than initial endoscopy<sup>10</sup>. But endoscopy is indicated in dyspeptic patients who are *H. pylori* negative and do not respond to empiric PPI therapy<sup>9</sup>. In this study 64.76% patient had significant GI lesion as found by endoscopy which is significantly different from other studies carried out in India<sup>11</sup> (46%) or USA<sup>4</sup> (23.2%). The frequency of gastric ulcer (1.9%), duodenal ulcer (6.66%), oesophagitis (2.86%) was more or less similar to those studies. But the main difference was in frequency of gastroduodenitis i.e. 57.14% in this study versus 17% and 5.3% respectively<sup>11,4</sup>. Gall bladder diseases which can cause dyspeptic symptoms were found in 2.85% (cholelithiasis and GB polyp) patient whereas it was 10.86% in study carried out by M. Mubarak et al<sup>11</sup>.

But incidentally these three patients with GB pathology with dyspepsia also had positive endoscopic GI lesion. No case of GI growth was revealed by endoscopy in this study. While gastric or oesophageal cancer is an unusual findings in patients with dyspepsia but endoscopy is a must to exclude malignancy<sup>12</sup>.

Recent data has shown that early endoscopic evaluation performed in an open access endoscopy unit resulted in diagnosis of earlier stage cancers and a better five year survival; however the diagnostic yield is low<sup>13</sup>. Higher prevalence of inflammatory lesions i.e. gastroduodenitis (57.14%) as found in this study may be due to addiction of rural people to betel leaf and nut and also irresponsible use of NSAIDs.

No organic cause of dyspepsia found in this study by UGI endoscopy or USG of HBS in 35.23% of patients. In contrary to higher percentage (50-70%) as found in other studies<sup>4,11</sup>. This percentage is quite low, may be due to strict compliance of inclusion criteria, food habit in rural area of Bangladesh and excessive uses of OTC drugs.

Functional dyspepsia is a diagnosis of exclusion. Several pathophysiologic mechanisms can underlie functional dyspeptic symptoms including delayed gastric emptying, impaired gastric accommodation to a meal, hypersensitivity to gastric distension, *H. pylori* infection, altered duodenal response to lipids or acids, abnormal duodeno-jejunal motility or central nervous system dysfunction<sup>14</sup>. A high prevalence of psychiatric disorders among patients specially females with functional dyspepsia has been reported<sup>11,15</sup>. This study also revealed psychological stress as suspected causative factor for functional dyspepsia and there is significant difference in gender preponderance simulating other studies<sup>11,15</sup>.

Negative endoscopy may reduce the anxiety and increase satisfaction in functional dyspeptic patients. After excluding organic causes and avoiding contributing factors they can be dealt with antipsychotic medications /therapy along with acid suppressant, antispasmodics, prokinetics etc more confidently. But severe or 'refractory' functional dyspepsia should alert clinicians to the possibility of misdiagnosis and may warrant further evaluation.

The main strength of this study is that GI endoscopy, USG of HBS, and validated symptoms questionnaire were applied to a representative sample of homogenous rural uninvestigated population. But because of non video endoscopy subjective error of gastroenterologist couldn't be ruled out. This study could be stronger with a larger sample size along with test for H. pylori, electrocardiogram and follow up of the patient after treatment. More research is needed for better understanding of the pathogenesis of dyspepsia thus allowing of better, more specific and cost effective treatment. Given the large burden of referral patients the appropriate role of endoscopy in the evaluation of dyspepsia is a pragmatic concern both for the gastroenterologist and primary health care providers.

### Conclusion

In this study most of the patients (67.76%) had significant upper GI endoscopic findings and labeled as organic dyspepsia. Combined use of UGI endoscopy and USG of HBS provides better yield for etiological diagnosis of dyspepsia if there is any, which can guide the clinicians regarding early and ideal therapeutic approach.

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