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# Endoscopic evaluation of dyspeptic patients with alarm symptoms

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**Abstract**

**Background:** Dyspepsia is defined as chronic or recurrent pain or discomfort centered in the upper abdomen characterized by nausea, vomiting, bloating, and early satiety. It's a common problem in the community and clinical practice. All guidelines recommend that patients older than 45 years and those with alarm symptoms should have a prompt endoscopy. There is a lack of data on endoscopy in patients with alarm features in Bangladesh. **Methods:** A prospective cross-sectional study of the endoscopic findings in adults with dyspepsia and alarm features in Khulna, Bangladesh. After collection, data editing and clearing were done manually and prepared for data entry and analysis by using SPSS version 17. **Results:** Fifty dyspeptic patients underwent endoscopies performed during 6 months, with a mean age of 42.12 (±14.69) years, 56% were male, and 44% were female. Most of the patients' education was primary level (74%). The majority of the patients were service holders (50%). Abdominal pain (86%) was the highest alarming symptom, while weight loss (6%) was the lowest. In endoscopic examination, normal findings that are functional dyspepsia were highest (40%), found less in suspected esophageal malignancy (02%). Nutrition status of these patients was average (58%), malnourished were (42%). In the distinct age group (≥ 50 years), vomiting, haematemesis and melaena were the highest alarming symptoms. Vomiting (63.6%) was the highest alarming symptom in the female group, while melaena (57.14%) was the highest alarming symptom in the male group. **Conclusion:** Although the presence of alarm symptoms predicts a bad prognosis, the positive predictive values were low and the negative predictive values high, reflecting low incidences of the diseases in the population at risk. The majority of patients who developed cancer or ulcer did not present with alarm symptom(s) at the initial consultation.

**Keywords:** Endoscopy, Dyspepsia, Alarm symptoms.

## Introduction

Dyspepsia is characterized as chronic or recurrent pain or discomfort that is localized in the upper abdomen. The term "discomfort" refers to subjectively negative feeling that is non-painful, which might include several symptoms such as early satiety, upper abdominal fullness, or nausea.[1] In community surveys in the United States and Europe, reports appear that up to 50% of individuals have dyspepsia.[2] This is also very common in our subcontinent, particularly Bangladesh. Although only a minority of people with dyspepsia seek care,[3,4] this complaint still accounts for 2% to 3% of visits to family physicians.[5]

Dyspepsia is a common complaint in clinical practice; therefore, its management should be based on the best evidence. Patients presenting with predominant epigastric pain or discomfort who have not undergone any investigations are defined as having uninvestigated dyspepsia. In patients with dyspepsia who are investigated, there are 5 major causes: gastroesophageal reflux (with or without esophagitis), medication side effects, functional dyspepsia, chronic peptic ulcer disease (PUD), and malignancy.

Alarm features have traditionally been applied to identify serious underlying conditions of dyspepsia, especially malignancy. These include unexplained weight loss, anorexia, early satiety, vomiting, progressive dysphagia, odynophagia, haematemesis &/or melaena, anaemia, jaundice, an abdominal mass, lymphadenopathy, and a family history of upper gastrointestinal tract cancer.[6,7] According to the ACG (American College of Gastroenterology) guidelines, in the patient with alarm features, prompt endoscopy is considered the gold standard to ensure that malignancy has not been missed.

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Patients with dyspepsia who seek medical attention are more concerned about the possible seriousness of their symptoms and are more likely to be concerned about the underlying cancer.[8] Information about the differential diagnosis of this condition largely comes from studies in which patients with dyspepsia were referred for upper GIT endoscopy.[9] The patients in this study who did not have any abnormalities on endoscopy will be considered to have functional dyspepsia.

Upper gastrointestinal endoscopy is usually required to definitively diagnose the cause in patients suffering from dyspepsia. Endoscopy is generally believed to be more accurate and the gold standard, especially for lesions smaller than 5 mm.[10,11] Another advantage of endoscopy is the ability to take a biopsy from lesions suspicious for malignancy and to perform invasive tests for H. pylori infection. Other imaging studies are not routinely recommended for the evaluation of dyspepsia.
The most recent American, Canadian, and European consensus-based guidelines all recommend that patients older than 45 years and those with alarm symptoms should have prompt endoscopy.[12-14] Patients not undergoing prompt endoscopy may be less satisfied with their care[15], which is related to the observation that patients with dyspepsia are more likely than physicians to value diagnostic certainty.[16] This study aimed to perform the endoscopic evaluation of dyspeptic patients with alarm symptoms.

## Materials and methods

**Study design:** Prospective cross-sectional study.

**Place of study:** The study was conducted in the Gastroenterology Department of Khulna Medical College Hospital, Khulna.

**Study population:** All patients of dyspepsia with alarm symptoms in the Gastroenterology ward of Khulna Medical College Hospital, Khulna.

**Sample size:** A total of 50 cases were enrolled in the study.

**Sampling method:** Purposive sampling.

**Inclusion criteria:**
- All patients of dyspepsia with alarm symptoms attending the Gastroenterology department of KMCH.
- Voluntarily given consent.

**Exclusion criteria:**
- Children & persons aged more than 70 years.
- Dyspepsia with pregnancy.
- Dyspepsia with severe comorbidity.

**Procedure of collecting data:** The patients were interviewed face-to-face by the researcher for the collection of data. Then the patients were examined by the researcher for certain signs, and those were recorded in the checklist. Few investigations would be done to support the diagnoses.

**Data analysis:** After collection, data editing and clearing were done manually and prepared for data entry and analysis by using SPSS version 17.

## Results

**Table 01: Age group distribution of the study population**

| Age group | Frequency | Percent |
|---|---|---|
| < 20 years | 05 | 10.0 |
| 21-30 years | 10 | 20.0 |
| 31-40 years | 13 | 26.0 |
| 41-50 years | 06 | 12.0 |
| 51-60 years | 11 | 22.0 |
| >60 years | 05 | 10.0 |
| Total | 50 | 100.0 |
| **Mean ±SD** | **42.12(±14.69)** | **18-67** |

Among the 50 dyspeptic patients who were evaluated in this study, with ages ranging from 18 to 67 years, the mean age was 42.12(±14.69) years. The distribution of dyspepsia among various age groups is depicted in Table 01. The maximum occurrence of dyspepsia was noted in 28 (56%) patients in the age group 18-40 years. Sex distributions are presented in Figure 01, where 56% patients were male, and 44% were female, and the male-to-female ratio was 1.18:1.

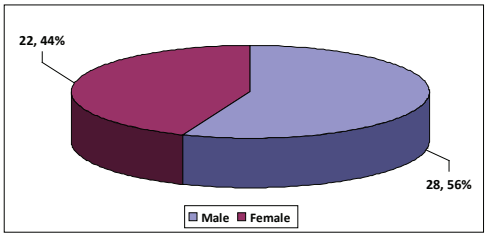


**Figure 01: Sex distribution of the study population**

**Table 02: Educational status of the study population**

| Education | Frequency | Percent |
|---|---|---|
| Primary | 37 | 74.0 |
| SSC | 08 | 16.0 |
| HSC | 04 | 08.0 |
| Graduate | 01 | 02.0 |
| Total | 50 | 100.0 |

Educational status of the patients shows the majority 37(74%) were primary, 08(16%) were SSC, 04(08%) were HSC and only 01(02%) were graduate.

The occupational status of the patients was as follows: the majority (50%) were service holders, 19 (38%) were housewives, and 06 (12%) were farmers (Figure 02).

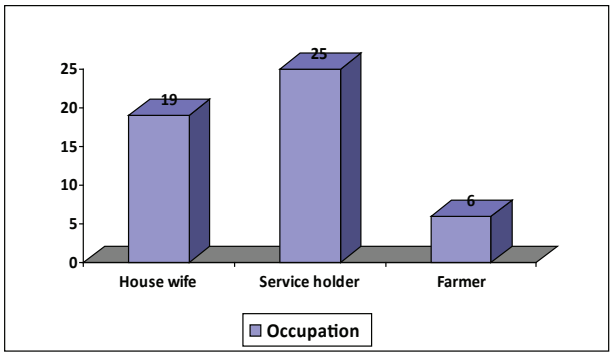


**Figure 02: Occupational status of the study population**

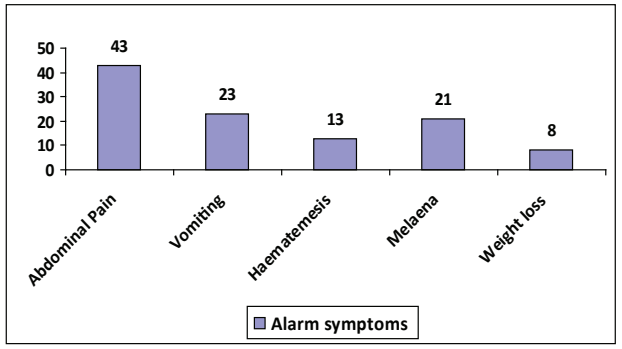


**Figure 03: Alarming symptoms of the study population**

Considering the patient's alarming symptoms, abdominal pain and vomiting were the most common in 43 (86%) and 23 (46%), respectively, the others being: Haematemesis 13 (26%), melena and weight loss 21 (42%).

**Table 03: Endoscopic Findings in Dyspepsia**

| Endoscopic Findings | Frequency | Percent |
|---|---|---|
| Esophageal erosions | 04 | 08 |
| Gastritis | 07 | 14 |
| Esophageal candidiasis | 02 | 04 |
| Esophageal varices | 03 | 06 |
| Normal /Functional dyspepsia | 20 | 40 |
| Suspected esophageal malignancy | 01 | 02 |
| Suspected gastric malignancy | 04 | 08 |
| Gastric ulcer | 03 | 06 |
| Duodenal ulcer | 06 | 12 |

A large number of patients with dyspepsia had normal endoscopic findings 20 (40%). Among the remaining patients 04 (08%) were esophageal erosions, 02 (04%) esophageal candidiasis, 03 (06%) esophageal varices, 01 (02%) suspected esophageal malignancy, 04 (08%) suspected gastric malignancy, 03 (06%) gastric ulcer, 06 (12%) duodenal ulcer & 07(14%) were gastritis.

**Table 04: Nutritional status of the study population**

| Nutritional Status | Frequency | Percent |
|---|---|---|
| Average | 29 | 58.0 |
| Malnourished | 21 | 42.0 |
| Total | 50 | 100.0 |

**Table 05: Alarming symptoms correlated with age group**

| Alarming symptoms | Age group | | Total | P value |
|---|---|---|---|---|
| | < 50 years n=31 | ≥ 50 years n=19 | | |
| Vomiting | 09(29.03) | 14(73.68) | 23 | 0.002$^{S}$ |
| Haematemesis | 02(6.45) | 11(57.89) | 13 | 0.001$^{S}$ |
| Melaena | 09(29.03) | 12(63.16) | 21 | 0.03$^{S}$ |
| Weight loss | 0 | 08(42.11) | 08 | <0.001$^{S}$ |
| Abdominal mass | 02(6.45) | 05(26.32) | 07 | 0.04$^{S}$ |

s=significant

In the distinct age group (≥ 50 years), vomiting, haematemesis and melaena were the highest alarming symptoms. Vomiting (63.6%) was the highest alarming symptom in the female group, while Melaena (57.14%) was the highest in the male group.

**Table 06: Alarming symptoms correlated with sex**

| Alarming symptoms | Sex | | Total | P value |
|---|---|---|---|---|
| | Male n=28 | Female n=22 | | |
| Vomiting | 09(31.1) | 14(63.6) | 23 | 0.02[S] |
| Haematemesis | 11(39.29) | 02(09.09) | 13 | 0.01[S] |
| Melaena | 16(57.14) | 05(22.73) | 21 | 0.02[S] |
| Weight loss | 04(14.29) | 04(18.18) | 08 | 0.71[NS] |
| Abdominal mass | 05(17.86) | 02(09.09) | 07 | 0.44 [NS] |

s=significant; ns=not significant

**Table 07: Association of alarm symptoms with endoscopic findings**

| Endoscopic Findings | Alarm Symptoms |
|---|---|
| Esophageal erosions | Vomiting |
| Gastritis | Abdominal pain, early satiety. |
| Esophageal candidiasis | Weight loss, vomiting, anaemia. |
| Normal /Functional dyspepsia | Heartburn, early satiety, vomiting |
| Suspected esophageal malignancy | Vomiting, anaemia, weight loss, dysphagia. |
| Suspected gastric malignancy | Vomiting, weight loss, anaemia, abdominal mass, melaena, haematemesis. |
| Gastric ulcer | Melaena, anaemia, vomiting |
| Duodenal ulcer | Melaena, anaemia. |
| Esophageal varices | Haematemesis, melaena, anaemia, jaundice, and ascites. |

## Discussion

An endoscopy is the standard for the diagnosis of structural disease in patients with dyspepsia. This study is designed to evaluate endoscopically dyspeptic patients with alarm symptoms. Alarm symptoms are symptom complexes that consist of vomiting, haematemesis or melaena, palpable abdominal mass, anaemia, dysphagia, odynophagia, weight loss, etc. This cross-sectional study was conducted in the Gastroenterology ward of Khulna Medical College Hospital, Khulna. The sample size was fifty.

The present study showed that among the 50 dyspeptic patients who were evaluated in this study, with ages ranging from 18 to 67 years, the mean age was 42.12(±14.69) years. M B Wallace et al.17 found in a study of endoscopic findings in dyspeptic patients had a mean age of the study sample as 47 year and Sachdeva et al.18 noted an average age of 41.18 ± 15.54 years. Sirula M et al.19 reported that gastritis tends to increase with increasing age. Dooley CP et al.20 Jones and Lydeard21 had also noticed that the frequency of dyspeptic symptoms declined with age, particularly in men. The male/female ratio in the studies conducted by Khan N et al was 2.3: I. in that of Ziauddin was 1.6:1. In these studies, the majority of patients were males, as observed in our study. In a population-based study in Australia, female adults significantly outnumbered males in most functional gastrointestinal disorders includes functional dyspepsia.[22]

Lieberman et al. Alarm symptoms were less common in patients with reflux dyspepsia, compared with the nonreflux group.[23] The present study shows alarming symptoms in a particular age group; a significant association in alarming symptoms was observed in 50 years age group patients, such as vomiting, haematemesis, melaena, weight loss, abdominal mass, and anaemia ($p < 0.05$).

The high cost of endoscopy and high prevalence of dyspepsia symptoms have led to extensive studies of how to get the best use of endoscopy. Adang and colleagues[24] studied 2900 consecutive patients in a referral practice and found that 21% of dyspeptic patients aged 45 years or less and 25% of those over 45 years had significant pathology identified by upper endoscopy. In another cohort study of 2253 dyspeptic patients, Mansi and colleagues[25] found a high prevalence (approximately 70%) of major and minor pathology. A high but variable prevalence of major pathology (20—50%), including 2% of carcinoma,[26,27] has also been observed in three cohort studies in a general practice setting Attempts to use clinical variables such as age and certain "alarm" symptoms such as weight loss, bleeding, dysphagia, anaemia, or recurrent vomiting to predict pathology have met with variable success. Talley et al. have developed a scheme for classifying dyspepsia into ulcer-like, dysmotility-like, reflux-like, and unspecified.[28] Population based studies have shown that this classification is[29,30] using a population-based survey in poor predictor of anatomical pathology. Norway, Johnsen, and colleagues compared endoscopic findings in 309 patients with and 310 patients without dyspepsia.

The American Gastroenterological Association recommendation and common clinical practice is to perform endoscopy on patients with dyspepsia and "alarm" symptoms over the age of 45. Younger patients without alarm symptoms can be treated empirically, with endoscopy reserved for when symptoms fail to resolve.[31] Christie and colleagues[32] identified all gastric cancer cases within a defined region of England, and retrospectively assessed alarm symptoms

symptoms from chart review.

In this study, a large number of patients with dyspepsia had normal endoscopic findings 20(40%). The abnormal findings included esophageal erosions in 04(08%) patients, esophageal candidiasis in 02(04%) patients, esophageal varices in 03(06%) patients, suspected esophageal malignancy in 01(02%) patients, suspected gastric malignancy in 04(08%) patients, gastric ulcer in 03(06%) patients, duodenal ulcer in 06(12%) patients & gastritis in 07(4%) patients.

Khan N et al. The endoscopic findings of 50 patients with dyspepsia were studied. Out of 50 patients, 35(70%) were males while 15(30%) were females. 41 out of 50 cases (82%) were in the age group of 30-50 years. The most common presentations were epigastric pain in 45 (90%) cases, heartburn in 36 (72%), and flatulence in 35 (70%) cases. The endoscopic findings were normal in 25 (50%) patients. The abnormal findings included esophagitis in 6 (12%) patients, gastric ulcer in 5 (10%) patients, duodenal ulcer in 4 (8%) patients, gastritis in 4 (8%) patients and duodenitis in 2 (4%) patients; while esophagogastritis, gastroduodenitis, esophagogastroduodenitis and carcinoma stomach were present in 1 (2%) patient each. All the endoscopically abnormal as well as normal findings were confirmed by histopathology. They concluded that endoscopic findings were normal in the majority of patients with dyspepsia. The common abnormal endoscopic findings included esophagitis, gastric ulcer, duodenal ulcer, and gastritis. The endoscopic findings were matching with histological diagnosis.[6]

In another study, 57,000 patients with dyspepsia, alarm symptoms showed a positive predictive value for GI cancer of 11% in all.[11] The negative predictive value of alarm symptoms was much higher, at 97%, because of the low prevalence of GI cancer in this population. A second meta-analysis of 26 studies that totaled more than 16,000 patients with dyspepsia showed similar results: the positive predictive value of alarm symptoms for upper- GI cancer was only 5.9%, and the negative predictive value was 99%.[12] Unfortunately, clinical impression, demographics, risk factors, history items, and symptoms also do not adequately distinguish structural disease from functional disease in patients with dyspepsia who are referred for endoscopy.[14] It is worth noting that one fourth of patients with malignancy and dyspepsia have no alarm symptoms.[12]

Most guidelines for the management of dyspepsia emphasize that patients with alarm symptoms (e.g., anaemia, black stools, bloody stools, dysphagia, jaundice, weight loss) should undergo endoscopic evaluation. In the study conducted by 93 general practitioners in Denmark systematically collected for three years on more than 7.000 patients presenting with dyspepsia. A random sample of 988 patients from different diagnostic groups with and without alarm symptoms was used to determine the predictive value of alarm symptoms. Overall, 2% (105) of the patients in this group had one or more alarm symptoms; the most common were weight loss (46), dysphagia (35), black stools (24), and bloody stools (14). The positive predictive value of any alarm symptom for cancer was 3%, and for ulcer was 10%; negative predictive values were 99 and 97%, respectively. The risk of cancer during the follow-up period was increased in persons with dyspepsia and alarm symptoms as compared with the general population.[33]

In summary, patients with dyspepsia who are older than 50 years of age or those with alarm features should undergo an endoscopy. An endoscopy should also be considered for patients in whom there is a clinical suspicion of malignancy, even in the absence of alarm features. In this study, patients who are suffering from more than one alarm symptom, like weight loss, anaemia & vomiting, or weight loss, dysphagia & anaemia, the positive predictive value for malignancy is more than that of those who are suffering from any one alarm symptom.

### Limitations

Limitations of this study include its retrospective design, lack of testing for H. pylori endoscopically, and inability to confirm the diagnosis of cancer histologically because the investigators had no access to the histology reports of the study participants who returned to their primary physicians after the endoscopy procedure.

## Conclusion

The unaided clinical diagnosis of dyspepsia is of limited value in separating functional dyspepsia from clinically relevant organic causes of dyspepsia. The identification of one or more alarm features e.g. weight loss, dysphagia, signs of GI bleeding, an abdominal mass or age over 50 yrs may help to identify patients with a higher risk of organic disease. These findings demonstrate the need for better clinical predictors of upper GI pathology. Endoscopy is the only test capable of distinguishing benign from malignant GI ulcer and of assessing the risk of bleeding from ulcers. Patients with dyspepsia who are older than 50 years of age or those with alarm features should undergo an endoscopy. An endoscopy should be considered for patients in whom

there is a clinical suspicion of malignancy even in the absence of alarm features.

**Competing interest**

The authors declare no competing interests.

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