# Correlation between Gastrointestinal Symptoms Questionnaire and Findings of Upper Gastrointestinal Endoscopy in Gastrointestinal Disorders

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## ABSTRACT
**Background:** Gastrointestinal diseases are among the most common problems in tropical countries and commonly manifest as diarrhea, abdominal pain, abdominal distention, gastrointestinal bleeding, intestinal obstruction, malabsorption, or malnutrition.
**Objective:** The aim of this work was to compare the efficacy of gastrointestinal symptoms questionnaire and results of upper gastrointestinal endoscopy to create an optimally reliable tool for measuring the presence and severity of GI symptoms and to measure the symptomatic response to treatment more objectively.
**Subjects and Methods:** This study has been conducted on 100 patients complaining of gastrointestinal symptoms attending the Gastrointestinal Endoscopy Unit in Faculty of Medicine, Ain Shams University Hospital. All patients have been evaluated by upper GI endoscopy to measure the correlation between gastrointestinal symptoms questionnaire and upper GI endoscopy.
**Results:** There was significant correlation between gastrointestinal symptoms questionnaire and results of upper gastrointestinal disorders.
**Conclusion:** Gastrointestinal symptoms questionnaire is an easy used tool, which can be used to measure the presence, severity of gastrointestinal symptoms and the symptomatic response to treatment more objectively.
**Keywords:** Gastrointestinal disorders, Gastrointestinal symptoms questionnaire, Upper gastrointestinal endoscopy,

## INTRODUCTION

Gastrointestinal diseases are among the most common problems in tropical countries and commonly manifest as diarrhea, abdominal pain, abdominal distention, gastrointestinal bleeding, intestinal obstruction, malabsorption, or malnutrition [1]. Gastroesopha geal reflux is one of the commonestGIT

which is symptomstypically characterized by symptoms of heartburn, regurgitation and can lead to significant complications such as erosive esophagitis, Barrett's esophagus and esophageal adenocarcinoma[2].

Patients with peptic ulcer disease may be symptomatic or asymptomatic. Symptomatic patients generally present with dyspepsia. Most of the time, the pain is felt in the epigastric region, but sometimes it can be in the right upper quadrant or left upper quadrant of the abdomen. The pain is burning, or dull aching in nature and can radiate to the back in the case of posterior penetrating ulcer [3]. Ulcerative colitis (UC) presents with wide spectrum of symptomsc including abdominal pain, diarrhea, and hematochezia. The inflammation begins in the rectum and extends up the colon in a continuous manner till it reaches the ileum [4]. Crohn's disease **usually presents with** abdominal pain, fatigue, anemia and mineral deficiencies. Some patients will present with constitutional symptoms as fever, weight loss and growth failure among younger patients [5].

In patients with gastrointestinal tract GIT symptoms, endoscopy is the gold standard and is often the primary exploration. Positive findings in upper gastrointestinal endoscopy occur in 30 to 40% in relation to a benign or malignant structural disease. Negative findings occur in 60 to 70% of cases [1].

The upper gastrointestinal flexible fiber optic endoscope was first used in 1968 and proved to be a major breakthrough in the diagnosis of GIT lesions [6].

Upper GIT endoscopy that visualizes the upper part of the GIT up to duodenum is an established mode of investigation and treatment of wide range of upper GIT conditions. It also offers the opportunity for biopsy of neoplastic and non-neoplastic lesions. It is a simple, safe and well tolerated procedure with direct visualization of the pathologic site and biopsy leading to early detection of pathologic changes and therefore helps to start appropriate treatment [7].

Gastrointestinal Symptoms Questionnaire is a widely used instruments to measure the presence and severity of GI symptoms. These questionnaires can be used to measure the symptomatic response to treatment more objectively. Furthermore, these questionnaires are widely used in trials to describe the prevalence and severity of gastrointestinal symptoms in the study population as well as to evaluate treatment outcome [8].

The aim of this work was to compare the efficacy of gastrointestinal symptoms questionnaire and results of upper gastrointestinal endoscopy to create an optimally reliable tool for measuring the presence and severity of GI symptoms and to measure the symptomatic response to treatment more objectively.

## SUBJECTS AND METHODS

This study has been conducted on 100 patients complaining of gastrointestinal symptoms attending the Gastrointestinal Endoscopy Unit in Faculty of Medicine, Ain Shams University Hospital.

All patients have been evaluated by upper GI endoscopy to measure the correlation between gastrointestinal symptoms questionnaire and upper GI endoscopy.

**Inclusion criteria of selected patients under the study:** Patient aged above 18 years old, both

genders, and patient complaining of gastrointestinal symptoms.

**Exclusion criteria of selected patients under the study:** Patients with previous bariatric surgeries, surgeries involving resection of any bowel loop and patients on long term NSAIDS.

## Methodology

**The subjects under study underwent/were exposed to the following protocol:** History taking and subject interview including gastrointestinal symptoms questionnaire formed of 16 questions, this questionnaire included questions about the severity of GI symptoms during the last 4 weeks, rated 0–6, where 0 meant "no complaints" and 6 represented the worst imaginable severity of that symptom.

At the completion of the questionnaire, subjects were asked to **self-rate the severity** of their GI symptoms by marking line with a cross starting from no symptoms to unbearable symptoms.

**In the current study the following table of gastrointestinal symptoms questionnaire was used[9]:**

**Table (1):** Gastrointestinal symptoms questionnaire:

| | Do you experience during the last 4 weeks | Non | Mild | Moderate | Quite a lot | Severe | Very severe | unbearable |
|---|---|---|---|---|---|---|---|---|
| 1. | Abdominal pain <br> -in common <br> -postprandial <br> -fasting <br> -does not decline after defecation | | | | | | | |
| 2. | Epigastric pain <br> -in common <br> -during daytime <br> -at night/a sleep | | | | | | | |
| 3. | Heartburn | | | | | | | |
| 4. | Regurgitation | | | | | | | |
| 5. | Abdominal rumbling | | | | | | | |
| 6. | Bloating | | | | | | | |
| 7. | Empty feeling | | | | | | | |
| 8. | Nausea | | | | | | | |
| 9. | Vomiting | | | | | | | |
| 10. | Loss of appetite | | | | | | | |
| 11. | Postprandial fullness | | | | | | | |
| 12. | Belching | | | | | | | |
| 13. | Flatulence | | | | | | | |
| 14. | Hematemesis | | | | | | | |
| 15. | Dysphagia <br> 1) Liquid food <br> 2) Solid food | | | | | | | |
| 16. | Stool <br> • Melena <br> • Bloody <br> • Mucous <br> • Frequent hard <br> • Diarrhea <br> • Alternately solid or loose <br> • Constipation <br> • Frequently with pain <br> • Urging stools <br> • Incomplete <br> • Steatorrhea | | | | | | | |

Describe your abdominal or epigastric pain during the last 4 weeks by marking the line below

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No complaint                                                                    unbearable symptoms

Upper gastrointestinal endoscopy: using upper GI endoscopy to visualizes the upper part of the GIT up to duodenum [7].

**The following steps are done:**

Informed consent taken from the patient, explanation of the procedure to the patient, suitable anesthesia given to the patient and upper GI endoscopy done to visualize the upper part of GIT up to duodenum, any lesions were observed and reported.

Data collected from gastrointestinal symptoms questionnaire and upper GI endoscopy were collected and correlated with each other's.

**Ethical consent:**

**An approval of the study was obtained from Ain Shams University Academic and Ethical Committee. Every patient signed an informed written consent for acceptance of participation in the study.**

**This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.**

*Statistical analysis*

The Statistical Package for the Social Sciences (SPSS) version 20 was mainly used for data entry and analysis. Qualitative data were presented as frequencies (numbers) and relative frequencies (percentages); while means, standard deviations and ranges were used to describe quantitative variables. Pearson's chi-square test was used for comparing qualitative categorical data. P-values were taken at a pre-determined threshold probability, the significance level of 0.05 and 95% confidence limit.

**RESULTS**

Table (2) shows that 50 of patients were males and 50 of patients were females.

**Table (2): Age and sex of the studied participants**

| Statistics / Variables | Mean ± SD (N=100) | Range (Minimum-Maximum) |
|---|---|---|
| Age (Years): | 40.2±12.9 | 50 (19-69) |
| Sex: <br>• Males <br>• Females | Number (N=100) <br>50 <br>50 | % <br>50.0 <br>50.0 |

Table (3) shows association between gastrointestinal symptoms and esophagitis detected by endoscope. Reflux syndrome (heart burn and regurgitation) was statistically significantly more prevalent among patients who had esophagitis as compared to patients who didn't have esophagitis.

The proportions of patients who complained of epigastric pain, abdominal rumbling, bloating, empty feeling, nausea, vomiting, loss of appetite, postprandial fullness, belching, flatulence, hematemesis, dysphagia and steatorrhea were higher among esophagitis as compared to non-esophagitis group. However, this was without statistical significance.

**Table (3): Association between gastrointestinal symptoms and esophagitis detected by endoscope**

| Endoscopic finding / Gastrointestinal symptoms | | Esophagitis N=50 | % | No esophagitis N=50 | N=50 | Significant test and P value |
|---|---|---|---|---|---|---|
| **Abdominal pain** | Absent | 27 | **54.0** | 21 | **42.0** | $X^2$=1.44 |
| | Present | 23 | **46.0** | 29 | **58.0** | P=0.230 |
| **Epigastric pain:** | Absent | 24 | **48.0** | 29 | **58.0** | $X^2$=1.00 |
| | Present | 26 | **52.0** | 21 | **24.0** | P=0.316 |
| **Reflux syndrome:** | Absent | 25 | **50.0** | 38 | **76.0** | $X^2$=7.25 |
| | Present | 25 | **50.0** | 12 | **24.0** | **P=0.007***  |
| **Abdominal rumbling:** | Absent | 32 | **64.0** | 38 | **76.0** | $X^2$=1.71 |
| | Present | 18 | **36.0** | 12 | **24.0** | P=0.190 |
| **Bloating:** | Absent | 41 | **82.0** | 44 | **88.0** | $X^2$=0.71 |
| | Present | 9 | **18.0** | 6 | **12.0** | P=0.401 |
| **Empty feeling** | Absent | 33 | **66.0** | 36 | **72.0** | $X^2$=0.42 |
| | Present | 17 | **34.0** | 14 | **28.0** | P=0.517 |
| **Nausea:** | Absent | 39 | **78.0** | 44 | **88.0** | $X^2$=1.77 |
| | Present | 11 | **22.0** | 6 | **12.0** | P=0.183 |
| **Vomiting:** | Absent | 33 | **66.0** | 41 | **82.0** | $X^2$=3.32 |
| | Present | 17 | **34.0** | 9 | **18.0** | P=0.068 |
| **Loss of appetite:** | Absent | 21 | **42.0** | 25 | **50.0** | $X^2$=0.64 |
| | Present | 29 | **58.0** | 25 | **50.0** | P=0.422 |
| **Postprandial fullness:** | Absent | 32 | **64.0** | 38 | **76.0** | $X^2$=1.71 |
| | Present | 18 | **36.0** | 12 | **24.0** | P=0.190 |
| **Belching:** | Absent | 39 | **78.0** | 43 | **86.0** | $X^2$=1.08 |
| | Present | 11 | **22.0** | 7 | **14.0** | P=0.190 |
| **Flatulence:** | Absent | 36 | **72.0** | 40 | **80.0** | $X^2$=0.87 |
| | Present | 14 | **28.0** | 10 | **20.0** | P=0.298 |
| **Hematemesis:** | Absent | 45 | **90.0** | 45 | **90.0** | $X^2$=0.00 |
| | Present | 5 | **10.0** | 5 | **10.0** | P=1.00 |
| **Dysphagia:** | Absent | 47 | **94.0** | 50 | **100.0** | $X^2$=3.09 |
| | Present | 3 | **6.0** | 0 | **0.0** | P=0.079 |
| **Melena:** | Absent | 46 | **92.0** | 43 | **86.0** | $X^2$=0.91 |
| | Present | 4 | **8.0** | 7 | **14.0** | P=0.338 |
| **Constipation:** | Absent | 46 | **92.0** | 44 | **88.0** | $X^2$=0.44 |
| | Present | 4 | **8.0** | 6 | **12.0** | P=0.505 |
| **Alternately solid or loose stool:** | Absent | 45 | **90.0** | 46 | **92.0** | $X^2$=0.12 |
| | Present | 5 | **10.0** | 4 | **8.0** | P=0.727 |
| **Diarrhea:** | Absent | 47 | **94.0** | 45 | **90.0** | $X^2$=0.54 |
| | Present | 3 | **6.0** | 5 | **10.0** | P=0.461 |
| **Steatorrhea:** | Absent | 47 | **94.0** | 49 | **98.0** | $X^2$=1.04 |
| | Present | 3 | **6.0** | 1 | **2.0** | P=0.307 |

$X^2$= Chi square test, *= Statistically significant difference

Table (4) shows association between gastrointestinal symptoms and incompetent cardia detected by endoscope. Reflux syndrome (heart burn and regurgitation) was statistically significantly more prevalent among patients who had incompetent cardia as compared to patients who didn't have incompetent cardia.

**Table (4): Association between gastrointestinal symptoms and incompetent cardia detected by endoscope**

| Endoscopic finding<br>Gastrointestinal symptoms | | Incompetent cardia | | No incompetent cardia | | Significant test and P value |
|---|---|---|---|---|---|---|
| | | N=24 | % | N=76 | % | |
| **Abdominal pain** | Absent | 12 | **50.0** | 36 | **47.0** | $X^2$=0.05 |
| | Present | 12 | **50.0** | 40 | **52.6** | P=0.822 |
| **Epigastric pain:** | Absent | 11 | **45.8** | 42 | **55.3** | $X^2$=0. 65 |
| | Present | 13 | **54.2** | 34 | **44.7** | P=0. 420 |
| **Reflux syndrome:** | Absent | 11 | **45.8** | 52 | **68.4** | $X^2$=3.99 |
| | Present | 13 | **54.2** | 24 | **31.6** | **P=0.046**[*] |
| **Abdominal rumbling:** | Absent | 18 | **75.0** | 52 | **68.4** | $X^2$=0.37 |
| | Present | 6 | **25.0** | 24 | **31.6** | P=0.540 |
| **Bloating:** | Absent | 19 | **79.2** | 66 | **86.8** | $X^2$=0.84 |
| | Present | 5 | **20.8** | 10 | **13.2** | P=0.359 |
| **Empty feeling** | Absent | 16 | **66.7** | 53 | **69.7** | $X^2$=0.80 |
| | Present | 8 | **33.3** | 23 | **30.3** | P=0.777 |
| **Nausea:** | Absent | 20 | **83.3** | 63 | **82.9** | $X^2$=0.00 |
| | Present | 4 | **16.7** | 13 | **17.1** | P=0.960 |
| **Vomiting:** | Absent | 17 | **70.8** | 57 | **75.0** | $X^2$=0.16 |
| | Present | 7 | **29.2** | 19 | **25.0** | P=0.685 |
| **Loss of appetite:** | Absent | 9 | **37.5** | 37 | **48.7** | $X^2$=0.91 |
| | Present | 15 | **62.5** | 39 | **51.3** | P=0.338 |
| **Postprandial fullness:** | Absent | 15 | **62.5** | 55 | **72.4** | $X^2$=0.85 |
| | Present | 9 | **37.5** | 21 | **27.6** | P=0.358 |
| **Belching:** | Absent | 21 | **87.5** | 61 | **80.3** | $X^2$=0.64 |
| | Present | 3 | **12.5** | 15 | **19.7** | P=0.421 |
| **Flatulence:** | Absent | 19 | **79.2** | 57 | **75.0** | $X^2$=0.17 |
| | Present | 5 | **20.8** | 19 | **25.0** | P=0.677 |
| **Hematemesis:** | Absent | 22 | **91.7** | 68 | **89.5** | $X^2$=0.09 |
| | Present | 2 | **8.3** | 8 | **10.5** | P=0. 755 |
| **Dysphagia:** | Absent | 23 | **98.8** | 74 | **97.4** | $X^2$=0.14 |
| | Present | 1 | **4.2** | 2 | **2.6** | P=0. 701 |
| **Melena:** | Absent | 21 | **87.5** | 68 | **89.5** | $X^2$=0.07 |
| | Present | 3 | **12.5** | 8 | **10.5** | P=0.788 |
| **Constipation:** | Absent | 21 | **87.5** | 69 | **90.8** | $X^2$=0.21 |
| | Present | 3 | **12.5** | 7 | **9.2** | P=0.640 |
| **Alternately solid or loose stool:** | Absent | 23 | **95.8** | 68 | **89.5** | $X^2$=0.90 |
| | Present | 1 | **4.2** | 8 | **10.5** | P=0.343 |
| **Diarrhea:** | Absent | 22 | **91.7** | 70 | **92.1** | $X^2$=0.00 |
| | Present | 2 | **8.3** | 6 | **7.9** | P=0.945 |
| **Steatorrhea:** | Absent | 24 | **100.0** | 72 | **94.7** | $X^2$=1.31 |
| | Present | 0 | **0.0** | 4 | **5.3** | P=0.251 |

$X^2$= Chi square test, *= Statistically significant difference

Table (5) shows association between gastrointestinal symptoms and esophageal ulcer detected by endoscope. Reflux syndrome (heart burn and regurgitation), epigastric pain and empty feeling were statistically significantly more prevalent among patients who had esophageal ulcer as compared to patients who didn't have esophageal ulcer.

**Table (5): Association between gastrointestinal symptoms and esophageal ulcer detected by endoscope**

| Endoscopic finding<br>Gastrointestinal symptoms | | Esophageal ulcer | | No Esophageal ulcer | | Significant test and P value |
|---|---|---|---|---|---|---|
| | | N=7 | % | N=93 | % | |
| Abdominal pain | Absent | 4 | 57.1 | 44 | 47.3 | $X^2$=0.25 |
| | Present | 3 | 42.9 | 49 | 52.7 | P=0.616 |
| Epigastric pain: | Absent | 1 | 14.3 | 52 | 55.9 | $X^2$=4.52 |
| | Present | 6 | 85.7 | 41 | 44.1 | **P=0.033*** |
| Reflux syndrome: | Absent | 1 | 14.3 | 62 | 66.7 | $X^2$=7.66 |
| | Present | 6 | 85.7 | 31 | 33.3 | **P=0.006*** |
| Abdominal rumbling: | Absent | 4 | 57.1 | 66 | 71.0 | $X^2$=0.59 |
| | Present | 3 | 42.9 | 27 | 29.0 | P=0.441 |
| Bloating: | Absent | 6 | 85.7 | 79 | 84.9 | $X^2$=0.00 |
| | Present | 1 | 14.3 | 14 | 15.1 | P=0.956 |
| Empty feeling | Absent | 2 | 28.6 | 67 | 72.0 | $X^2$=5.75 |
| | Present | 5 | 71.4 | 26 | 28.0 | **P=0.016*** |
| Nausea: | Absent | 6 | 85.7 | 77 | 82.8 | $X^2$=0.04 |
| | Present | 1 | 14.3 | 16 | 17.2 | P=0.843 |
| Vomiting: | Absent | 6 | 85.7 | 68 | 73.1 | $X^2$=0.53 |
| | Present | 1 | 14.3 | 25 | 26.9 | P=0.464 |
| Loss of appetite: | Absent | 5 | 71.4 | 41 | 44.1 | $X^2$=1.95 |
| | Present | 2 | 28.6 | 52 | 55.9 | P=0.162 |
| Postprandial fullness: | Absent | 4 | 57.1 | 66 | 71.0 | $X^2$=0.59 |
| | Present | 3 | 42.9 | 27 | 29.0 | P=0.441 |
| Belching: | Absent | 7 | 100.0 | 75 | 80.6 | $X^2$=1.65 |
| | Present | 0 | 0.0 | 18 | 19.4 | P=0.199 |
| Flatulence: | Absent | 5 | 71.4 | 71 | 76.3 | $X^2$=0.08 |
| | Present | 2 | 28.6 | 22 | 23.7 | P=0.769 |
| Hematemesis: | Absent | 7 | 100.0 | 83 | 89.2 | $X^2$=0.84 |
| | Present | 0 | 0.0 | `10 | 10.8 | P=0. 360 |
| Dysphagia: | Absent | 6 | 85.7 | 91 | 97.8 | $X^2$=3.29 |
| | Present | 1 | 14.3 | 2 | 2.2 | P=0.070 |
| Melena: | Absent | 5 | 71.4 | 84 | 90.3 | $X^2$=2.37 |
| | Present | 2 | 28.6 | 9 | 9.7 | P=0.123 |
| Constipation: | Absent | 7 | 100.0 | 83 | 89.2 | $X^2$=0.83 |
| | Present | 0 | 0.0 | `10 | 10.8 | P=0.360 |
| Alternately solid or loose stool: | Absent | 5 | 71.4 | 86 | 92.5 | $X^2$=3.52 |
| | Present | 2 | 28.6 | 7 | 7.5 | P=0.061 |
| Diarrhea: | Absent | 7 | 100.0 | 85 | 91.4 | $X^2$=0.65 |
| | Present | 0 | 0.0 | 8 | 8.6 | P=0.419 |
| Steatorrhea: | Absent | 7 | 100.0 | 89 | 95.7 | $X^2$=0.31 |
| | Present | 0 | 0.0 | 4 | 4.3 | P=0.575 |

$X^2$= Chi square test, *= Statistically significant difference

Table (6) shows association between gastrointestinal symptoms and hiatus hernia detected by endoscope. Epigastric pain and reflux syndrome (heart burn and regurgitation) were statistically significantly more prevalent among patients who had hiatus hernia as compared to patients who didn't have hiatus hernia. The proportions of patients who complained of loss of appetite were higher among patients with hiatus hernia as compared to patients without hiatus hernia group. However, this was without statistical significance.

**Table (6): Association between gastrointestinal symptoms and hiatus hernia detected by endoscope**

| Endoscopic finding Gastrointestinal symptoms | | Hiatus hernia N=26 | % | No hiatus hernia N=74 | % | Significant test and P value |
|---|---|---|---|---|---|---|
| Abdominal pain | Absent | 16 | **61.5** | 32 | **43.2** | $X^2$=2.58 |
|  | Present | 10 | **38.5** | 42 | **56.8** | P=0.108 |
| Epigastric pain: | Absent | 8 | **30.8** | 45 | **60.8** | $X^2$=6.97 |
|  | Present | 18 | **69.2** | 29 | **39.2** | **P=008*** |
| Reflux syndrome: | Absent | 11 | **42.3** | 52 | **70.3** | $X^2$=6.45 |
|  | Present | 15 | **57.7** | 22 | **29.7** | **P=0.011*** |
| Abdominal rumbling: | Absent | 20 | **76.6** | 50 | **67.6** | $X^2$=0.80 |
|  | Present | 6 | **23.1** | 24 | **32.4** | P=0.371 |
| Bloating: | Absent | 24 | **92.3** | 61 | **82.4** | $X^2$=1.47 |
|  | Present | 2 | **7.7** | 13 | **17.6** | P=0.225 |
| Empty feeling | Absent | 19 | **73.1** | 50 | **67.6** | $X^2$=0.27 |
|  | Present | 7 | **26.9** | 24 | **32.4** | P=0.601 |
| Nausea: | Absent | 24 | **92.3** | 59 | **79.7** | $X^2$=2.15 |
|  | Present | 2 | **7.7** | 15 | **20.3** | P=0.142 |
| Vomiting: | Absent | 19 | **73.1** | 55 | **74.3** | $X^2$=0.01 |
|  | Present | 7 | **26.9** | 19 | **25.7** | P=0.901 |
| Loss of appetite: | Absent | 11 | **42.3** | 35 | **47.3** | $X^2$=0.19 |
|  | Present | 15 | **57.7** | 39 | **52.7** | P=0.661 |
| Postprandial fullness: | Absent | 19 | **73.1** | 51 | **68.9** | $X^2$=015 |
|  | Present | 7 | **26.9** | 23 | **31.1** | P=0.691 |
| Belching: | Absent | 21 | **80.8** | 61 | **82.4** | $X^2$=0.03 |
|  | Present | 5 | **19.2** | 5 | **17.6** | P=0.849 |
| Flatulence: | Absent | 19 | **73.1** | 57 | **77.0** | $X^2$=0.16 |
|  | Present | 7 | **26.9** | 17 | **23.0** | P=0.685 |
| Hematemesis: | Absent | 24 | **92.3** | 66 | **89.2** | $X^2$=0.20 |
|  | Present | 2 | **7.7** | 8 | **10.8** | P=0. 648 |
| Dysphagia: | Absent | 25 | **96.2** | 72 | **97.3** | $X^2$=0.08 |
|  | Present | 1 | **3.8** | 2 | **2.7** | P=0. 769 |
| Melena: | Absent | 24 | **92.3** | 65 | **87.8** | $X^2$=0.39 |
|  | Present | 2 | **7.7** | 9 | **12.2** | P=0. 531 |
| Constipation: | Absent | 25 | **96.2** | 65 | **87.8** | $X^2$=1.47 |
|  | Present | 1 | **3.8** | 9 | **12.2** | P=0.224 |
| Alternately solid or loose stool: | Absent | 25 | **96.2** | 66 | **89.2** | $X^2$=1.14 |
|  | Present | 1 | **3.8** | 8 | **10.8** | P=0.286 |
| Diarrhea: | Absent | 26 | **100.0** | 66 | **89.2** | $X^2$=3.05 |
|  | Present | 0 | **0.0** | 8 | **10.8** | P=0.080 |
| Steatorrhea: | Absent | 24 | **92.3** | 72 | **97.3** | $X^2$=1.24 |
|  | Present | 2 | **7.7** | 2 | **2.7** | P=0.264 |

$X^2$= Chi square test, *= Statistically significant difference

Table (7) shows association between gastrointestinal symptoms and gastritis detected by endoscope. Epigastric pain and reflux syndrome (heart burn and regurgitation) were statistically significantly more prevalent among patients who had gastritis as compared to patients who didn't have gastritis.

**Table (7): Association between gastrointestinal symptoms and gastritis detected by endoscope**

| Endoscopic finding<br>Gastrointestinal symptoms | | Gastritis | | No gastritis | | Significant test and P value |
|---|---|---|---|---|---|---|
| | | N=78 | % | N=22 | % | |
| Abdominal pain | Absent | 37 | 47.4 | 11 | 50.0 | $X^2$=0.04 |
| | Present | 41 | 52.6 | 11 | 50.0 | P=0.832 |
| Epigastric pain: | Absent | 36 | 46.2 | 17 | 77.3 | $X^2$=6.67 |
| | Present | 42 | 53.8 | 5 | 22.7 | **P=0.010*** |
| Reflux syndrome: | Absent | 43 | 55.1 | 20 | 90.9 | $X^2$=9.42 |
| | Present | 35 | 44.9 | 2 | 9.1 | **P=0.002*** |
| Abdominal rumbling: | Absent | 54 | 69.2 | 16 | 72.7 | $X^2$=0.10 |
| | Present | 24 | 30.8 | 6 | 27.7 | P=0.752 |
| Bloating: | Absent | 64 | 82.1 | 21 | 95.5 | $X^2$=2.41 |
| | Present | 14 | 17.9 | 1 | 4.5 | P=0120 |
| Empty feeling | Absent | 51 | 65.4 | 18 | 81.8 | $X^2$=2.16 |
| | Present | 27 | 34.6 | 4 | 18.2 | P=0.141 |
| Nausea: | Absent | 64 | 82.1 | 19 | 86.4 | $X^2$=0.22 |
| | Present | 14 | 17.9 | 3 | 13.6 | P=0.634 |
| Vomiting: | Absent | 55 | 70.5 | 19 | 86.4 | $X^2$=2.24 |
| | Present | 23 | 29.5 | 3 | 13.6 | P=0.134 |
| Loss of appetite: | Absent | 33 | 42.3 | 13 | 59.1 | $X^2$=1.94 |
| | Present | 45 | 57.7 | 9 | 40.9 | P=0.163 |
| Postprandial fullness: | Absent | 54 | 69.2 | 16 | 72.7 | $X^2$=0.10 |
| | Present | 24 | 30.8 | 6 | 27.3 | P=0.752 |
| Belching: | Absent | 63 | 80.8 | 19 | 86.4 | $X^2$=0.36 |
| | Present | 15 | 19.2 | 3 | 13.6 | P=0.546 |
| Flatulence: | Absent | 57 | 73.1 | 19 | 86.4 | $X^2$=1.66 |
| | Present | 21 | 26.9 | 3 | 13.6 | P=0.197 |
| Hematemesis: | Absent | 73 | 93.6 | 17 | 77.3 | $X^2$=5.07 |
| | Present | 5 | 6.4 | 5 | 22.7 | **P=0.024*** |
| Dysphagia: | Absent | 75 | 96.2 | 22 | 100.0 | $X^2$=0.87 |
| | Present | 3 | 3.8 | 0 | 0.0 | P=0.350 |
| Melena: | Absent | 71 | 91.0 | 18 | 81.8 | $X^2$=1.48 |
| | Present | 7 | 9.0 | 4 | 18.2 | P=0.223 |
| Constipation: | Absent | 69 | 88.5 | 21 | 95.5 | $X^2$=0.93 |
| | Present | 9 | 11.5 | 1 | 4.5 | P=0.334 |
| Alternately solid or loose stool: | Absent | 69 | 88.5 | 22 | 100.0 | $X^2$=2.79 |
| | Present | 9 | 11.5 | 0 | 0.0 | P=0.095 |
| Diarrhea: | Absent | 71 | 91.0 | 21 | 95.5 | $X^2$=0.45 |
| | Present | 7 | 9.0 | 1 | 4.5 | P=0.499 |
| Steatorrhea: | Absent | 75 | 96.2 | 21 | 95.5 | $X^2$=0.02 |
| | Present | 3 | 3.8 | 1 | 4.5 | P=0.882 |

$X^2$= Chi square test, *= Statistically significant difference

Table (8) shows association between gastrointestinal symptoms and gastric ulcer detected by endoscope. Postprandial fullness, loss of appetite, nausea, abdominal rumbling, bloating and melena were statistically significantly more prevalent among patients who had gastric ulcer as compared to patients who didn't have gastric ulcer.

**Table (8): Association between gastrointestinal symptoms and gastric ulcer detected by endoscope**

| Gastrointestinal symptoms | Endoscopic finding | Gastric ulcer N=6 | % | No gastric ulcer N=94 | % | Significant test and P value |
|---|---|---|---|---|---|---|
| Abdominal pain | Absent | 4 | 66.7 | 44 | 46.8 | $X^2$=0.89 |
| | Present | 2 | 33.3 | 50 | 53.2 | P=0.345 |
| Epigastric pain: | Absent | 2 | 33.3 | 51 | 54.3 | $X^2$=0.99 |
| | Present | 4 | 66.7 | 43 | 45.7 | P=0.319 |
| Reflux syndrome: | Absent | 3 | 50.0 | 60 | 63.8 | $X^2$=0.46 |
| | Present | 3 | 50.0 | 34 | 36.2 | P=0.496 |
| Abdominal rumbling: | Absent | 2 | 33.3 | 68 | 72.3 | $X^2$=4.08 |
| | Present | 4 | 66.7 | 26 | 27.7 | **P=0.043*** |
| Bloating: | Absent | 3 | 50.0 | 82 | 87.2 | $X^2$=6.13 |
| | Present | 3 | 50.0 | 12 | 12.8 | **P=0.013*** |
| Empty feeling | Absent | 3 | 50.0 | 66 | 70.2 | $X^2$=1.07 |
| | Present | 3 | 50.0 | 28 | 29.8 | P=0.299 |
| Nausea: | Absent | 3 | 50.0 | 80 | 85.1 | $X^2$=4.92 |
| | Present | 3 | 50.0 | 14 | 14.9 | **P=0.026*** |
| Vomiting: | Absent | 3 | 50.0 | 71 | 75.5 | $X^2$=1.91 |
| | Present | 3 | 50.0 | 23 | 24.5 | P=0.167 |
| Loss of appetite: | Absent | 0 | 0.00 | 46 | 48.9 | $X^2$=5.43 |
| | Present | 6 | 100.0 | 48 | 51.1 | **P=0.020*** |
| Postprandial fullness: | Absent | 1 | 16.7 | 69 | 73.4 | $X^2$=8.64 |
| | Present | 5 | 83.3 | 25 | 26.6 | **P=0.003*** |
| Belching: | Absent | 4 | 66.7 | 78 | 83.0 | $X^2$=1.01 |
| | Present | 2 | 33.3 | 16 | 17.0 | P=0.313 |
| Flatulence: | Absent | 4 | 66.7 | 72 | 76.6 | $X^2$=0.30 |
| | Present | 2 | 33.3 | 22 | 23.4 | P=0.581 |
| Hematemesis: | Absent | 5 | 83.3 | 85 | 90.4 | $X^2$=0.31 |
| | Present | 1 | 16.7 | 9 | 9.6 | P=0.575 |
| Dysphagia: | Absent | 6 | 100.0 | 91 | 96.8 | $X^2$=0.19 |
| | Present | 0 | 0.0 | 3 | 3.2 | P=0.657 |
| Melena: | Absent | 3 | 50.0 | 86 | 91.5 | $X^2$=9.91 |
| | Present | 3 | 50.0 | 8 | 8.5 | **P=0.002*** |
| Constipation: | Absent | 5 | 83.3 | 85 | 90.4 | $X^2$=0.31 |
| | Present | 1 | 16.7 | 9 | 9.6 | P=0.575 |
| Alternately solid or loose stool: | Absent | 6 | 100.0 | 85 | 90.4 | $X^2$=0.63 |
| | Present | 0 | 0.0 | 9 | 9.6 | P=0.427 |
| Diarrhea: | Absent | 6 | 100.0 | 86 | 91.5 | $X^2$=0.55 |
| | Present | 0 | 0.0 | 8 | 8.5 | P=0.456 |
| Steatorrhea: | Absent | 6 | 100.0 | 90 | 95.7 | $X^2$=0.26 |
| | Present | 0 | 0.0 | 4 | 4.3 | P=0.606 |

$X^2$= Chi square test, *= Statistically significant difference

## DISCUSSION

Gastrointestinal symptoms questionnaire is a simple tool for screening of gastrointestinal symptoms. This questionnaire had been developed to measure the presence and severity of GI symptoms and to measure the symptomatic response to treatment more objectively[9]. The current study was conducted on 100 patients complaining of gastrointestinal symptoms. The aim of the current work is to compare the efficacy of gastrointestinal symptoms questionnaire and results of upper gastrointestinal endoscopy to create an optimally reliable tool for measuring the presence and severity of GI symptoms and to measure the symptomatic response to treatment more objectively.

All patients were subjected to history taking to assess the presence and degree of gastrointestinal symptoms and upper gastrointestinal endoscopy to detect the presence of any lesions in upper gastrointestinal tract.

In the current study correlation between gastroesophageal reflux disease (GERD) and esophagitis was statistically significant. Reflux symptoms were more prevalent among patients who had esophagitis as compared to patients who didn't have esophagitis. Epigastric pain, abdominal rumbling, bloating, empty feeling, nausea, vomiting, loss of appetite, postprandial fullness, belching, flatulence, hematemesis, dysphagia and steatorrhea were higher among esophagitis as compared to non-esophagitis group. However, this was without statistical significance.

The previous correlation confirmed by **Badillo and Francis** [10] who published that GERD could manifest in a wide range of symptoms, which can be

subdivided into typical, atypical and extra-esophageal symptoms. Typical symptoms include heartburn and acid regurgitation, which have high specificity but low sensitivity for GERD. Atypical symptoms such as epigastric pain, dyspepsia, nausea, bloating, and belching may be suggestive of GERD but may overlap with other conditions in the differential diagnosis such as peptic ulcer disease, achalasia, gastritis, dyspepsia, and gastroparesis. In the current study there was statistically significant correlation between reflux syndrome (heart burn and regurgitation) and incomplete cardia as compared to patients who did not have incomplete cardia. The proportions of patients who complained of epigastric pain and loss of appetite were higher among patients with incomplete cardia as compared to patients without incomplete cardia group. However, this was without statistical significance. This means that these symptoms are not specific for incompetent cardia and can present with other gastrointestinal lesions.

In a study done by **Falavigna** *et al.* [11] on 150 patient, they published that pathological acid reflux was present in 43 and 71% of patients with normal or open cardia, respectively, their conclusion was that endoscopic appearance of the cardia can identify patients with pathological gastroesophageal reflux.

In the current study there was statistically significant correlation between {reflux syndrome (heart burn and regurgitation), epigastric pain and empty feeling} and esophageal ulcer among patients who had esophageal ulcer as compared to patients who did not have esophageal ulcer.

In a study done by **Rantanen** *et al.* [12] on 2242 patient, they published that gastroesophageal reflux disease (GERD) seemed to be the etiologic factor for ulcer in 68 (79.0%) patients. The most common agonal symptoms were hematemesis (41.8%), abdominal pain (25.6%), and melena (22.1%).

In the current study there was statistically significant correlation between {epigastric pain and reflux syndrome (heart burn and regurgitation)} and hiatus hernia among patients who had hiatus hernia as compared to patients who didn't have hiatus hernia.

In the current study there was statistically significant correlation between {epigastric pain and reflux syndrome (heart burn and regurgitation)} and gastritis among patients who had gastritis as compared to patients who didn't have gastritis. The proportions of patients who complained of abdominal pain, abdominal rumbling, bloating, loss of appetite, nausea, vomiting, postprandial fullness, belching, flatulence, empty feeling, dysphagia, constipation and diarrhea were higher among patients with gastritis as compared to patients who didn't have gastritis. However, this was without statistical significance. This means that these symptoms are not specific for gastritis and can present with other gastrointestinal lesions. The proportions of patients who complained of reflux syndrome (heart burn and

regurgitation), epigastric pain, hematemesis, vomiting, belching, flatulence and constipation and empty feeling were higher among patients with gastric ulcer as compared to patients who didn't have gastric ulcer. However, this was without statistical significance.

## CONCLUSION

Gastrointestinal symptoms questionnaire is an easy used tool which can be used to measure the presence, severity of gastrointestinal symptoms and the symptomatic response to treatment more objectively.

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