



Research Article

PREVALENCE OF CLINICALLY SIGNIFICANT ENDOSCOPIC FINDINGS AND ITS RELATION TO ALARM SYMPTOMS AND AGE IN PATIENTS ATTENDING CLINIC AT ST. DOMINIC HOSPITAL, AKWATIA, GHANA

Dr. Amoako Duah*, Dr. Adwoa Agyei Nkansah, Dr. Maite Alfonso Romero and Dr. Rafiq Okine

St. Dominic Hospital, P.O.Box 59, Akwatia, E/R, Ghana

ARTICLE INFO

Article History:

Received 12th February, 2019

Received in revised form 23rd

March, 2019

Accepted 7th April, 2019

Published online 28th May, 2019

Key words:

Dyspepsia, alarm features, significant endoscopic findings, prevalence

ABSTRACT

Background: Upper Gastrointestinal (UGI) symptoms are among the commonest complaints for which patients seek medical attention, with the annual prevalence of dyspepsia approximating 25%. Due to the high prevalence of dyspepsia, a prompt endoscopy for every dyspeptic patient is not a practical approach, as this will lead to high costs and low yield of endoscopy. Age and alarm symptoms, have been shown to be predictive in some studies, but not in others. This study was to examine the prevalence of significant endoscopic findings (SEF) and utility of alarm features and age in predicting SEF.

Materials and Methods: A hospital-based cross-sectional study conducted at endoscopy unit of St. Dominic Hospital. Patients with dyspepsia with or without alarm features referred for Gastroscopy were selected and endoscopic findings recorded.

Results: A total of 487 patients had upper GI endoscopy during the study period, of those 206 (42.3%) were males. Their ages ranged from age 4 to 94 years, with a median age of 48. Only 119 (24.4%) patients had SEF. Multivariable logistic regression analysis showed that age ≥ 50 years, presence of any alarm feature, male sex and presence of H. pylori infection were significantly associated with the presence of SEFs

Conclusion: Dyspeptic patients have low prevalence of SEF. The presence of any alarm features, male sex, positive H. pylori test and age ≥ 50 years are associated with higher risk of SEF. Patients < 50 years with no alarm features has a low endoscopic yield; non endoscopic approach for diagnosis and management for these patients can be considered.

Copyright©2019 Dr. Amoako Duah et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Dyspepsia encompasses a constellation of upper abdominal symptoms (epigastric pain or discomfort, post-prandial fullness, bloating, early satiety) affecting 20% to 40% of the western population in western countries.¹⁻⁴ The symptoms of dyspepsia overlap significantly with those associated with peptic ulcer disease, epigastric pain syndrome, irritable bowel syndrome, malignancy, adverse effects of medications, pancreatitis, biliary tract disease, vascular disease and motility disorders. Dyspepsia is associated with poor health related quality of life and greater psychosocial distress.⁵⁻⁶ Many patients with dyspepsia are referred to gastroenterologist for consultation and endoscopy.⁷⁻⁸ Given this large burden of referral patients, the appropriate role of endoscopy in the evaluation of dyspepsia is both a pragmatic concern for the gastroenterologist and an important determinant of health care cost. Based on this the American Gastroenterological Association currently recommends endoscopy in all patients over the age of 45 and those with alarm symptoms (weight loss, recurrent vomiting, dysphagia, bleeding, or anaemia)

to exclude an organic pathology such as oesophago-gastric malignancy and peptic ulcer disease. Otherwise, patients can be managed by either the “test and treat” strategy for H. pylori or a trial of proton pump inhibitor (PPI) depending on the H. pylori prevalence.⁹ Age and alarm symptoms, have been shown to be predictive in some studies,¹⁰⁻¹⁵ but not in others.¹⁶⁻¹⁸ This study was to examine the prevalence of significant endoscopic findings (SEF) and utility of alarm features and age in predicting SEF in patients seeking care at St. Dominic Hospital, a district hospital in Ghana. This will help to refine the role of age and alarm features in clinical decision making regarding which patients should be referred to do endoscopy.

MATERIALS AND METHODS

Ethical Approval

A formal approval of this study was obtained from the Ethical and Protocol Committee of the University of Ghana School of Medicine and Dentistry. This study was conducted in accordance with the Helsinki Declaration.

*Corresponding author: Dr. Amoako Duah

St. Dominic Hospital, P.O.Box 59, Akwatia, E/R, Ghana

Participants Recruitment

The study used a cross-sectional design to consecutively recruit medical in-patients and clinic outpatients referred to the Endoscopy Unit of the St. Dominic Hospital (SDH) with dyspeptic symptoms with or without alarm features for endoscopy, from 14th January, 2018 to 26th April, 2019.

Study site

SDH was founded in 1960 and has 339 beds and is the district hospital of Denkyembour district, Akwatia in Eastern region of Ghana. It is the main referral centre for other surrounding district hospitals. It offers a breadth of medical and surgical services including gastroenterology and endoscopy. The Endoscopy Unit is manned by a medical gastroenterologist with the support of trained nurses and auxiliary staff. It uses Olympus and video endoscopy equipment for endoscopic procedures. It runs endoscopy sessions twice per week and offers both upper and lower GI endoscopy services. Each session performs approximately 5 upper endoscopies and 1 lower GI endoscopy. Procedures performed are both diagnostic and interventional. The latter include variceal band ligation

Procedures

Study participant recruitment and data collection was performed at the Endoscopy Unit, SDH, between January 2018 and April 2019. Medical in-patients and clinic outpatients with dyspeptic symptoms with or without alarms referred to the Endoscopy Unit, SDH were enrolled into the study. Study participants were consecutively recruited each week from endoscopy unit. All patients were given explanatory statements of the project and consented prior to endoscopy. Non-consenting patients were excluded from the analysis. Demographic data of patients taken included age, sex, occupation etc. Indications for the upper gastrointestinal endoscopy (UGIE) were also recorded. UGIE was performed using the Olympus CV-160 videoscope. Study participants were given the option of sedation with (intravenous midazolam 2mg) and/ or 10% lidocaine (xylocaine) throat spray. *H. pylori* infection was determined by the rapid-urease-*campylobacter* like-organism (CLO) test on gastric antral and body biopsies at UGIE (specificity 98%, sensitivity >93%; Cambridge Life Sciences Ltd, Cambridge, UK. Endoscopic findings per each participant were recorded in details. We define significant endoscopic findings as the presence of any of the following findings: gastric ulcer, duodenal ulcer, erosive oesophagitis, oesophageal candidiasis, Mallory Weiss tear, malignancy and stricture.

Statistical Analysis

Data were analysed with STATA 15. Descriptive statistics were used to characterize patient demographic features. Continuous variables were presented as median (interquartile range) and categorical data were summarized using proportions. The presence of SEF in patients with and without alarm features and in patients within different age categories were compared. The Chi square and the Fishers exact test (where appropriate) of independence was performed to examine the association of different endoscopic findings with the presence of alarm features. A multivariate logistic regression analysis was conducted to determine the factors that are associated with clinically significant endoscopic findings (SEF). A p-value less than 0.05 was considered significant.

RESULTS

Table 1 shows the socio-demographics and clinical presentation of the study population. A total of 487 patients had upper GI endoscopy during the study period, of those, 206 (42.3%) were males giving a male to female ratio of 1:1.4. Their ages ranged from age 4 to 94 years, with a median age of 48 (34, 59). Only 119 (24.4%) patients had significant endoscopic findings. This was more likely to be found in male patients (59.7% versus 40.3%, $p = <0.0001$). *H. pylori* was found in 206 (42.3%) of the participants. One hundred and six (106, 21.8%) had dyspepsia with alarm features. Majority (49/61, 80.3%) of the dyspeptic patients who had SEF were aged between 40-79 years (Fig. 1).

Table 2 shows the findings of endoscopy stratified by the presence or absence of alarm features. Among all patients, 452(92.8%) had at least one endoscopic abnormality. This did not statistically differ between patients with alarm features versus no alarm features (92.1% versus 95.3%, resp., $p = 0.266$). Only 119(24.4%) patients had significant endoscopic findings. This was more likely to be found in patients with alarm features compared to those without any alarm features (57.6% versus 15.2%, $p = <0.0001$). The common endoscopic abnormality were gastritis and duodenitis which were more frequent in patients without alarm features. Peptic ulcer disease was found in 97 (19.9%) of patients. This was more likely to be found in patients with alarm features compared to those without any alarm features. Malignancy was found in only 18 (3.7%) patients, all of whom significantly had one or more alarm features ($p = <0.0001$). Other SEF (oesophageal ulcer, oesophageal candidiasis and Mallory Weiss tear) were all associated with alarm features. Multivariable logistic regression analysis showed that age ≥ 50 years, presence of any alarm feature, male sex and presence of *H. pylori* infection were significantly associated with the presence of SEFs (Table 30).

Table 1 Socio-demographic and clinical presentation of patients with dyspepsia with or without alarm features: St. Dominic Hospital, Akwatia, Ghana, 14th January, 2018 to 26th April, 2019.

Socio-demographic and clinical Presentations	Frequency (%)	
Sex (n=487)		
Male	206 (42.3)	
Female	281 (57.7)	
Age (years)		
Overall	48 (34,59)*	
Males	45 (34,59)*	
Females	49 (34,64)*	
Clinical presentation (n=487)		
Dyspepsia without alarms	381 (78.2)	
Dyspepsia with alarms	106 (21.8)	
All endoscopic abnormalities	452 (92.8)	
Male	194 (42.9)	0.319
Female	258 (57.1)	
Clinically significant endoscopic findings (SEF)	119 (24.4)	
Male	71 (59.7)	< 0.0001 [†]
Female	48 (40.3)	
CLO Test positive	206 (42.3)	

*Median (IQR)

Table 2 Endoscopic findings in dyspeptic patients with or without alarm features: St. Dominic Hospital, Akwatia, Ghana, 14th January, 2018 to 26th April, 2019.

OGD Findings	All patients (n=487)	No Alarm (n=381)	Alarm (n=106)	p - value
All endoscopic abnormalities	452 (92.8)	351 (92.1)	101(95.3)	0.266
Clinically significant endoscopic findings (SEF)	119 (24.4)	58 (15.2)	61 (57.6)	<0.0001 [†]
Inflammatory conditions				
<i>Gastritis</i>	356	309 (81.1)	47 (44.3)	<0.0001 [†]
<i>Duodenitis</i>	163 (33.47)	152 (39.9)	11 (10.4)	<0.0001 [†]
<i>Esophagitis</i>	14 (2.9)	10 (2.6)	4 (3.8)	0.517
Peptic Ulcer				
<i>Gastric ulcer</i>	53 (10.9)	33 (8.7)	20 (18.9)	0.003 [†]
<i>Duodenal Ulcer</i>	44 (9.0)	21 (5.5)	23 (21.7)	<0.0001 [†]
Malignancy				
<i>Esophageal Ca</i>	7 (1.4)	0 (0)	7 (6.6)	<0.0001 [†]
<i>Gastric Ca</i>	11 (2.3)	0 (0)	11 (10.4)	<0.0001 [†]
Other findings				
<i>Esophageal ulcer</i>	2 (0.4)	0 (0)	2 (1.9)	0.047 [†]
<i>Candida</i>	2 (0.4)	0 (0)	2 (1.9)	0.047 [†]
<i>Weiss tear</i>	1 (0.2)	0 (0)	1 (0.9)	0.218

[†] - statistically significant

Table 3 Regression analysis: factors associated with clinically significant endoscopic findings (SEF): St. Dominic Hospital, Akwatia, Ghana, 14th January, 2018 to 26th April, 2019.

Variables	Crude OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Age (≥ 50 years)	3.06 (1.98 – 4.72)	< 0.0001 [†]	4.37 (2.16 – 8.85)	< 0.0001 [†]
Sex (Male)	2.55 (1.67 – 3.90)	< 0.0001 [†]	2.69 (1.37 – 5.30)	0.004 [†]
Presence of alarm feature	7.55 (4.69- 12.15)	< 0.0001 [†]	5.8 (2.82 – 11.91)	< 0.0001 [†]
H. pylori infection	1.22 (0.79 – 1.87)	0.357	2.47 (1.22 – 4.98)	0.011 [†]

[†] - statistically significant

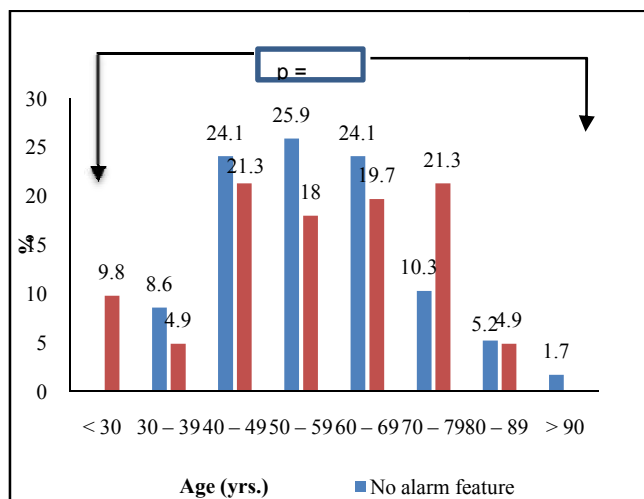


Fig 1 Age distribution of patients with SEF with and without alarm features: St. Dominic Hospital, Akwatia, Ghana, 14th January, 2018 to 26th April, 2019.

DISCUSSION

Upper Gastrointestinal (UGI) symptoms are among the commonest complaints for which patients seek medical attention, with the annual prevalence of dyspepsia approximating 25%.¹⁹ Due to the high prevalence of dyspepsia, a prompt endoscopy for every dyspeptic patient is not a practical approach, as this will lead to high costs and low yield of endoscopy.^{1,20-22} The approach for evaluating and

managing patients with dyspepsia focuses on identifying high risk patients including those older than 45-55 years and those with one or more alarm features. It is recommended that these two groups of patients undergo UGIE to exclude an organic pathology such as esophagogastric malignancy and peptic ulcer disease. Otherwise, patients can be managed by either the “test and treat” strategy for H. pylori or a trial of proton pump inhibitor (PPI) depending on the H. pylori prevalence.^{1,11} This study aimed to examine the prevalence of SEF and utility of alarm features and age in predicting SEF in patients seeking care at St. Dominic Hospital, a district hospital in Ghana.

The prevalence of SEF in this study was 24.4% and alarm features were present in the majority of these patients. This is lower than 35.5% reported by previous study in this country²³ and 27.5% reported by Ford et al.² However this is higher than 10% prevalence reported by Khaled et al.²⁴ The difference may be due to the heterogeneity of the participants in various studies. The participants of the study by Khaled et al.,²⁴ were out-patients with dyspepsia compare to previous study conducted in the teaching hospital in this country where the participants were both out-patients and in-patients with other high risk co-morbidity. The duration of request and the date the endoscopy were performed may affect the outcome. The reason may be that they might be given a trial of PPI or asked to discontinue possible culprit medications, such as NSAIDs. This could have allowed the healing of some lesions and prevented their detection at the time of endoscopy. However, this is reflective of daily practice and should not be considered a weakness in this study.⁷

The presence of alarms features was predictive of SEF (peptic ulcer disease, gastroesophageal malignancy, oesophageal ulcer, Mallory Weiss tear and oesophageal candidiasis) in this study. This is similar to previous studies in this country^{23,25} and other countries^{2,24} where alarm symptoms were predictive of SEF. This study supports the recommendation that all patients with dyspepsia with alarm features should undergo UGIE to exclude an organic pathology such as esophagogastric malignancy and peptic ulcer disease. Apart from the alarm features male sex, age ≥ 50 years and presence of H. pylori were also significant risk factors for SEF. Age has been applied as a means of identifying those at higher risk of having structural disease. American College of Physicians guidelines has traditionally used an age of over 45 years as their cut off age. Indeed, the presence of gastric cancer is very rare below age 45 years, but its incidence rapidly increases in the western world thereafter.^{15,26} Moreover, previous data has suggested that being older than 40 years is an independent risk indicator for SEF,^{27,28} although some studies disagree.¹⁰ Data from the UK suggest that an age threshold of above 55 years may be more appropriate.²⁶ In Asian Pacific region, the age specific incidence of gastric cancer begins to rise after the age of 35 years and therefore a lower age threshold appears more appropriate.³⁰ Previous studies in this country²⁵ reported that age >50 years and above and another one²³ stated age 45 years and above as significant predictors of SEF. Age threshold for identifying structural disease is useful, but that the cut off must be defined for each region based on the known age specific incidence of gastric cancer especially.

Male sex as a predictor of SEF reported in this study are similar to those from previous studies.^{23,30-31} The lower rate of positive yield in females may be in support of the knowledge

that dyspepsia in females is more likely than in males to be functional.³²

Positive *H. pylori* test have been demonstrated by several studies to be a predictor of SEF particularly peptic ulcer disease.³³⁻³⁶ This confirmed the report from this study which identified the presence of *H. pylori* as a significant predictor of SEF. The British Society of Gastroenterology had recommended that *H. pylori* testing be used to identify those with dyspepsia who should be referred for endoscopy.³⁷ However, this option will result in referral of more young dyspeptics who are *H. pylori*-positive especially in high prevalence areas such as Ghana and may result in a paradoxical increase in waiting lists for endoscopy. Test and treat strategy for *H. pylori* and referral for endoscopy for patients older than 45-55 years and those with one or more alarm features should still be recommended.

CONCLUSION

The prevalence of significant endoscopic findings in patient with dyspepsia is low, particularly in patients younger than 50 years and without alarm features. Guidelines in this country should highlight the low yield of endoscopy in this group of patients and recommended non-endoscopic workup as alternative to endoscopy. Those patients should also be reassured that their symptoms are unlikely related to an underlying significant pathology and should be encouraged to defer endoscopy. Provision of non-endoscopic means of assessing dyspepsia such as noninvasive *H. pylori* testing and updating the knowledge of clinicians in the management of dyspepsia could prove vital in ensuring efficient use of endoscopy resources.

Acknowledgement

We are grateful to Sethina, Rev. Sr. Georgina and Bertha, endoscopy nurses of Saint Dominic Endoscopy Unit, for their assistance during patient recruitment. Special appreciation also goes to Dr. med. Hans-Georg Jester and Dr. med. Nikos Stergiou of Asklepios clinic, Seligenstadt for their immense contribution in the setting up of the SDH endoscopy unit and their continuous support in its operation.

Reference

1. El-Serang HB, Talley NJ. Systemic review: the prevalence and clinical course of functional dyspepsia. *Aliment Pharmacol Ther* 2004; 19(6):643-54.
2. Ford AC, Marwaha A, Sood R, et al. Global prevalence of, and risk factors for, uninvestigated dyspepsia: a meta-analysis. *Gut*. Epub 2014 Aug 21.
3. Mahadeva S, Goh KL. Epidemiology of functional dyspepsia: a global perspective. *World J Gastroenterol* 2006;12:2661-6.
4. Castillo EJ, Camilleri M, Locke GR, et al. A community-based, controlled study of the epidemiology and pathophysiology of dyspepsia. *Clin Gastroenterol Hepatol* 2004;2:985-96
5. Ford AC, Marwaha A, Lim A, et al. Systematic review and meta-analysis of the prevalence of irritable bowel syndrome in patients with dyspepsia. *Clin Gastroenterol Hepatol* 2010;8:401-9
6. Talley NJ. Functional (non-ulcer) dyspepsia and gastroesophageal reflux disease: one not two disease? *Am J Gastroenterol* 2013;108:775-7

7. Ahlwat SK, Richard Locke G, Weaver AL, et al. Dyspepsia consultants and patterns of management: a population-based study. *Aliment Pharmacol Ther* 2005; 22:251-9
8. Hungin AP, Rubin GP. Management of dyspepsia across the primary-secondary healthcare interface. *Dig Dis* 2001;19:219-24
9. American Gastroenterological Association medical position statement: evaluation of dyspepsia. *Gastroenterology* 1998; 114:579-81
10. Adang RP, Vismans JF, Talmon JL, et al. Appropriateness of indications for diagnostic upper gastrointestinal endoscopy: association with relevant endoscopic disease. *Gastrointest Endosc* 1995;42:390-7.
11. Christie J, Shepherd NA, Codling BW, et al. Gastric cancer below the age of 55: implications for screening patients with uncomplicated dyspepsia. *Gut* 1997;41:513-17.
12. Edenhalm M, Gustavsson R, Jansson O, et al. Endoscopic findings in patients with ulcer-like dyspepsia. *Scand J Gastroenterol Suppl* 1985;109:163-7.
13. Gillen D, McColl KE. Does concern about missing malignancy justify endoscopy in uncomplicated dyspepsia in patients aged less than 55? *Am J Gastroenterol* 1999;94:75-9.
14. Heaney A, Collins JS, Tham TC, et al. A prospective study of the management of the young *Helicobacter pylori* negative dyspeptic patient—can gastroscopies be saved in clinical practice? *Eur J Gastroenterol Hepatol* 1998;10:953-6.
15. Williams B, Luckas M, Ellingham JH, et al. Do young patients with dyspepsia need investigation? *Lancet* 1988;2: 1349-51.
16. Bytzer P, SchaValitzky de Muckadell OB. Prediction of major pathologic conditions in dyspeptic patients referred for endoscopy. A prospective validation study of a scoring system. *Scand J Gastroenterol* 1992;27:987-92.
17. Mansi C, Savarino V, Mela GS, et al. Are clinical patterns of dyspepsia a valid guideline for appropriate use of endoscopy? A report on 2253 dyspeptic patients. *Am J Gastroenterol* 1993;88:1011-5.
18. Wiklund I, Glise H, Jerndal P, et al. Does endoscopy have a positive impact on quality of life in dyspepsia? *Gastrointest Endosc* 1998;47:449-54.
19. Talley NJ, Vakil N, "Guidelines for the management of dyspepsia," *American Journal of Gastroenterology* 2005; 100(10):2324-2337.
20. Zagari RM, Law GR, Fuccio L, et al. "Dyspeptic symptoms and endoscopic findings in the community: the loiano-monghidoro study," *American Journal of Gastroenterology* 2010; 105(3):565-571.
21. Chey WD and Moayyedi P. "Review article: uninvestigated dyspepsia and non-ulcer dyspepsia—the use of endoscopy and the roles of *Helicobacter pylori* eradication and antisecretory therapy," *Alimentary Pharmacology & Therapeutics*. 2004;19 :1-8.
22. Thomson ABR, Barkun AN, Armstrong D, "The prevalence of clinically significant endoscopic findings in primary care patients with uninvestigated dyspepsia: the Canadian Adult Dyspepsia Empiric Treatment-

- Prompt Endoscopy (CADETPE) study,” *Alimentary Pharmacology and Therapeutics*. 2003; 17(12):1481–1491.
23. Tachi K, Nkrumah KN. Appropriateness and Diagnostic Yield of Referrals for Oesophagogastroduodenoscopy at the Korle-Bu Teaching Hospital. *West African Journal of Medicine* 2011; 30(3): 159-163.
 24. Abdeljawad K, Wehbeh A, Qayed E. Low Prevalence of Clinically Significant Endoscopic Findings in Outpatients with Dyspepsia. *Gastroenterology Research and Practice*. Volume 2017, Article ID 3543681, 7 pages <https://doi.org/10.1155/2017/3543681>
 25. Dakubo JCB, Clegg-Lamptey JN, Sowah P. Appropriateness of Referrals for Upper Gastrointestinal Endoscopy. *West African Journal of Medicine* 2011; 30(5): 343-347.
 26. Christie J, Shepherd NA, Codling BW, Valori RM. Gastric cancer below the age of 55: implications for screening patients with uncomplicated dyspepsia. *Gut* 1997; 41: 513-7.
 27. Johannessen T, Petersen H, Kleaveland PM, et al. The predictive value of history in dyspepsia. *Scand J Gastroenterol* 1990; 25: 689-97.
 28. Bernersen B, Johnsen R, Straume B. Non-ulcer dyspepsia and peptic ulcer: the distribution in a population and their relation to risk factors. *Gut* 1996; 38: 822-5.
 29. Lam SK, Talley NJ. Report of the 1997 Asia Pacific Consensus Guidelines on the Management of H. pylori. *J Gastroenterol Hepatol* 1998; 13: 1-12.
 30. Chan Y-M, Goh K-L. Appropriateness and diagnostic yield of EGD: a prospective study in large Asian hospital. *Gastrointest Endosc* 2004; 59: 517–524
 31. Froehlich F, Repond C, Müllhaupt B, Vader J-P, Burnand B, Schnieder C, et al. Is the diagnostic yield of upper GI endoscopy improved by the use of explicit panel based appropriateness criteria? *Gastrointest Endosc* 2000; 52: 333–341.
 32. Holtmann G, Goebell H, Talley NJ. Dyspepsia in consulters and nonconsulters: prevalence, health-care seeking behaviour and risk factors. *Eur J Gastroenterol Hepatol* 1994; 6: 917–924.
 33. McColl KEL, El-Nujumi A, Murray L, et al. The Helicobacter pylori breath test: a surrogate marker for peptic ulcer disease in dyspeptic patients. *Gut* 1997; 40: 302-6.
 34. Patel P, Khulusi S, Mendall MA, et al. Prospective screening of dyspeptic patients by Helicobacter pylori serology. *Lancet* 1995; 346: 1315-8.
 35. Vaira D, Stanghellini V, Menegatti M, et al. Prospective screening of dyspeptic patients by Helicobacter pylori serology: a safe policy? *Endoscopy* 1997; 29: 595-601.
 36. Fraser AG, Ali MR, McCulloch S, et al. Diagnostic tests for Helicobacter pylori ± can they select patients for endoscopy? *NZ Med J* 1996; 109: 95-8.
 37. Axon ATR, Bell GD, Jones RH, et al. Guidelines on appropriate indication for upper gastrointestinal endoscopy. *Br Med J* 1995; 310: 853-6.

How to cite this article:

Dr. Amoako Duah *et al* (2019) 'Prevalence of Clinically Significant Endoscopic Findings and its Relation to Alarm Symptoms and age in Patients Attending Clinic at st. Dominic Hospital, Akwatia, Ghana', *International Journal of Current Advanced Research*, 08(05), pp. 18612-18616. DOI: <http://dx.doi.org/10.24327/ijcar.2019.18616.3563>
