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RELATIONSHIP BETWEEN VARIOUS INDICATIONS AND ENDOSCOPIC FINDINGS IN PATIENTS PRESENTING TO THE TERTIARY CARE HOSPITAL IN PESHAWAR

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ABSTRACT

ORIGINAL RESEARCH ARTICLE

Objective: To determine the relationship of various indications for upper GI endoscopy with the positive findings after endoscopic evaluation and biopsy.

Material and methods: It was a prospective analytical study done at the department of medicine Kuwait Teaching Hospital Peshawar from 1st January 2018 till 31st December 2018. After approval from the hospital ethical and research committee the study was conducted with patients recruited through non probability consecutive sampling presenting to the OPD.

Results: Among the total 1499 patients examined 18% were females and 82% were males. Minimum age was 25 and maximum age was 70. The data was stratified further in to various age groups, the highest number of respondents of 30.06%(451) lied in the age group 54.5-64.5, whereas age group 74.5-84.5 had the lowest number of respondents i.e. 0.46%(7). The indications for endoscopy were assessed according to the age group and it was found that the highest no. 78.7%(1180) of the patients presented with retrosternal burning, 38.8%(581) presented dyspepsia, 10.8%(161) presented with gastro esophageal reflux, 10.4%(156) has unexplained anemia, 10%(151) had persistent vomiting, (8.2%) 123 reported dysphagia, 6.3%(101) reported chronic diarrhea, and 2.2%(33) presented with hematemesis. On performing endoscopy, it was found that 43.5 % (651) had normal findings, 27.2 %(407) patients had pan hemorrhagic gastritis, 8.3 % (124) had reflux esophagitis, 6.2% (93) had gastric adenocarcinoma, esophageal carcinoma was found in 2.9 % (75). other findings were, H. Pylori gastritis in (33) 1.83%, esophageal candidiasis in (29) 2% of the cases, gastric ulcer in 24 (1.6%), duodenal ulcer in (25) 1.6%, duedenitis in (12)0.8%, achalasia in (9) 0.6%, duodenal growth (undifferentiated) in (5) 0.3% Antral gastritis in (5) 0.3%, villous atrophy in 4 (0.26%) Barrett`s esophagus in (2) 0.1%, and drug induced ulcer in 0.06% (1).

The percentage of normal endoscopies was greatest in the age group 24.5 to 54.5. Symptoms like heart burn were also more common in age

group 25 to 45. And it was lowest in the 65 to 75-year group. Post meal distension was common in 45 to 55 and 64 to 74 years' group and low in 35 to 45-year age group. Unexplained abdominal pain was common in 45 to 65 years and uncommon in 35 to 45 and 64 to 74-year age group. Melena was found in the group 35 o 45 and 65 to 75 years. It was lower in 55 to 65-year age group. Hematemesis was common in 35 to 55-year group and lower in 65 to 75 years. Chronic diarrhea was commonly seen in the group 65 to 75 it was lower in 45 to 55 years. Dyspepsia was common in 45 to 65-year age group and lower after wards. Unexplained anemia was observed mostly in 25 to 45 years and 55 to 75-year age group; it was lower in 45 to 55-year group.

Next Binomial Logistic regression was applied to assess the relationship between different indications and age and sex of the patients. The result shows that age has no significant relationship with any of the diseases whereas sex had a significant relationship as Melena was common in males and GERD and unexplained abdominal pain common in females.

Similarly, Pearson correlation revealed age bearing no significant relationship with any of the symptoms. The study used Stata version 14 to apply Cohort Study technique to assess the relationship between the dependent variable i.e. listed indications and independent variable i.e. Endoscopic findings. Results of Cohort study shows that among the selected symptoms like PMD, and Melena has a negative relationship with endoscopic findings suggesting a very limited role of these indications for a subsequent endoscopy as the Odd ratio or Risk ration for these variables is less than one. Whereas dyspepsia, Anaemia, unexplained abdominal pain, Dysphagia, GERD and hematemesis are valid indicators as they bear a positive relationship with abnormal endoscopic findings.

Conclusion: Endoscopy is a useful tool but the number of normal endoscopies in younger patients is high. Symptoms like post meal distension and melena found due to improper sample collection are misleading indications, whereas nonresponsive dyspepsia, unexplained anemia, unexplained abdominal pain, dysphagia and GERD, and hematemesis are all valid indications.

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INTRODUCTION:

An endoscopy is a useful tool. It has several diagnostic and therapeutic implications[1]. Moreover, it is being increasingly used for cancer surveillance[2]. However, since the establishment of an open-access endoscopy unit, many inappropriate referrals are made which increases the burden of health care systems. It has been estimated that up to 56% of the endoscopies performed are inappropriate[3]. Even though some official guidelines are available[4], a substantial number of patients are referred for upper GI endoscopies especially the younger population in whom the likelihood of a positive diagnosis is poor[4,5]. Since it is an invasive procedure the risks associated with this procedure are high. This practice also reduces the life of this expensive equipment. The disintegrated healthcare system and lack of checks and balances have fueled the increase in inappropriate referrals. The study aims to

evaluate various indications for upper GI endoscopy requests and correlate them to a possible positive diagnosis. The results of the study will impact practice regarding timely and appropriate referrals especially for the population at risk.

MATERIAL AND METHODS:

It was a prospective analytical study undertaken at the Department of Medicine, Kuwait Teaching Hospital Peshawar. The duration of the study was 12 months from January 1, 2015, to December 31, 2015.

After approval from the hospital ethical and research committee, the study was conducted and it included patients recruited through nonprobability consecutive sampling presenting to the OPD, aged more than 20 years with symptoms of post-meal distension, unexplained abdominal pain, chronic diarrhea, Melena, unresponsive dyspepsia, retrosternal burning, dysphagia, hematemesis, and unexplained anemia. Patients with variceal bleed were excluded from the study. A written and informed consent was taken and patients were subjected to a detailed history and clinical examination after which upper GI endoscopy was performed using Fujinon LS 2200 endoscope, a single operator with video recording. It was performed by Dr. Noor Mohammad associate professor medicine.

RESULTS:

Age Group of the Respondents:

Among the respondents the highest number of respondents of 451 lies in the age group 54.5-64.5, whereas age group 74.5-84.5 has the lowest number of respondents (Table 1).

Table I: Demographic Distribution of patients

Age	No. of patients
24.5-34.5	236 (15.7%)
34.5-44.5	272(1.81%)
44.5-54.5	451(30.0%)
54.5-64.5	248(16.5%)
64.5-74.5	285(19%)
74.5-84.5	7(o.46%)

Gender of the Respondents

Among the respondents 82 per cent and 18 per cent were male and female respectively (Figure 1).

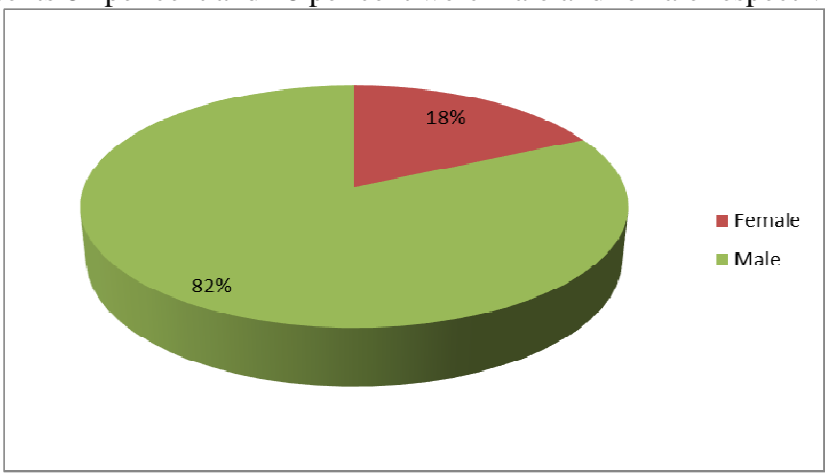


Figure 1: Gender of the Respondents

Symptoms and the percentage of patients:

Amongst the total 1500 patients, the highest number i.e. 1180 (78.7%) were found to have the problem of retrosternal burning where the lowest number of respondents i.e. 33 (2.2%) were found to have the problem of Hematemesis (Table 2). Many patients had multiple symptoms.

Table II: Symptoms and Number of Patients

Indication	Number of Patients	Percentage
Retrosternal burning	1180	78.7
GERD	161	10.8
Anemia	156	10.4
Unexplained abdominal pain	151	10
Dysphagia	123	8.2
Melena	101	6.3
Chronic diarrhea	42	2.8
Hematemesis	33	2.2
Dyspepsia	581	38.8

Table III : Endoscopic Findings and percentage of patients

Endoscopic findings	Number of the patients	Percentage of the patients
Normal	651	43.5%
Panhemorrhagic gastritis	407	27.2%
GERD	124	8.3%
Gastric carcinoma	93	6.2%
Ca oesophagus	75	2.9%
H. pylori gastritis	33	1.83%
Oesophageal candidiasis	29	2%
Gastric ulcer	24	1.6%
Duodenal ulcer	25	1.6%
Duodenitis	12	0.8%
Achalasia	9	0.6%
Duodenal growth (undifferentiated)	5	0.3%
Villous atrophy	4	0.26%
Barrett's oesophagus	2	0.1%
Drug induced ulcer	1	0.6%

Figure 2: Age Group and Percentage of Normal Endoscopic Findings

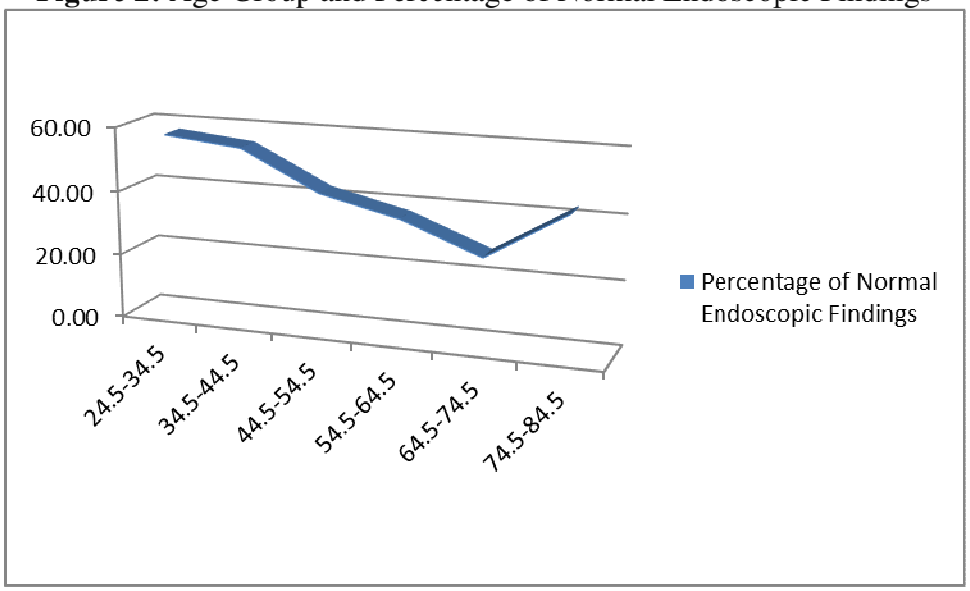


Figure 3: Age Group and Percentage of retrosternal burning**:**

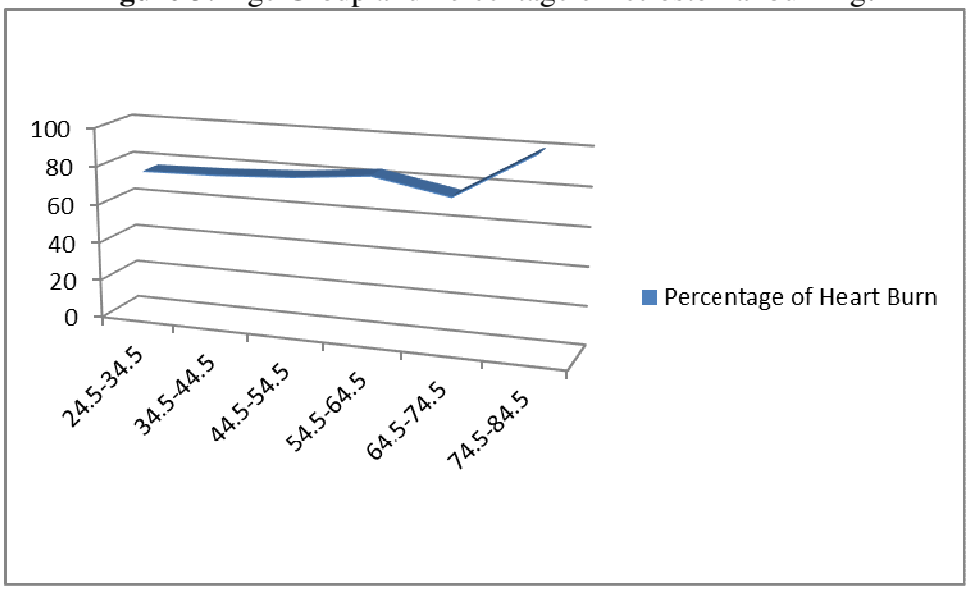


Figure 4: Age Group and Percentage of PMD

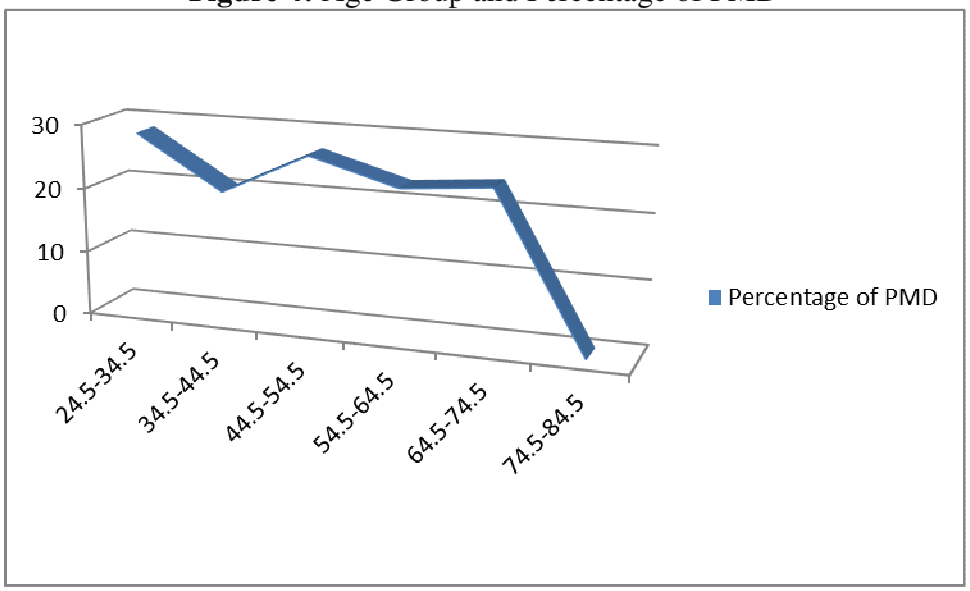


Figure 5: Age Group and Percentage of unexplained abdominal pain

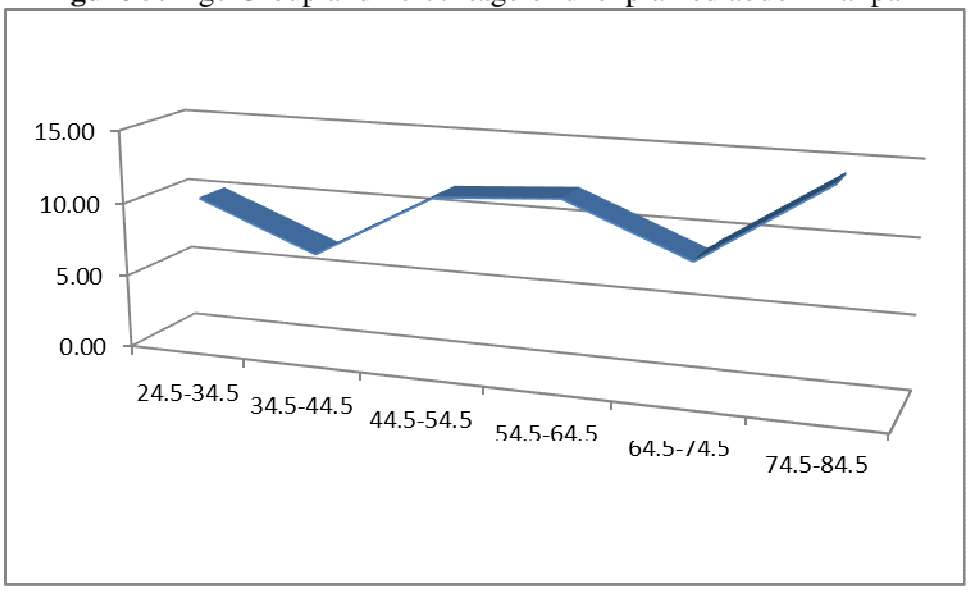


Figure 6: Age Group and Percentage of Dysphagia

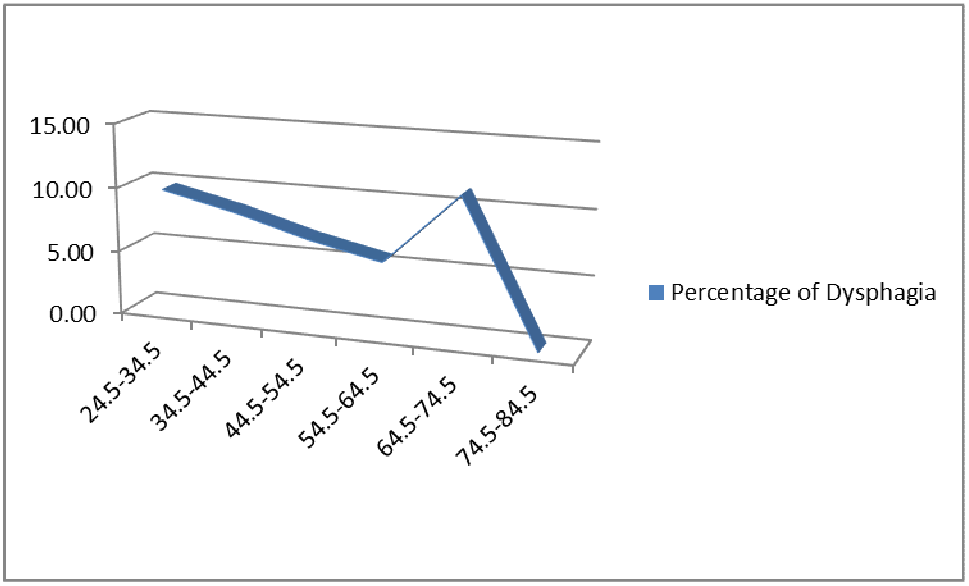


Figure 7: Age Group and Percentage of melena:

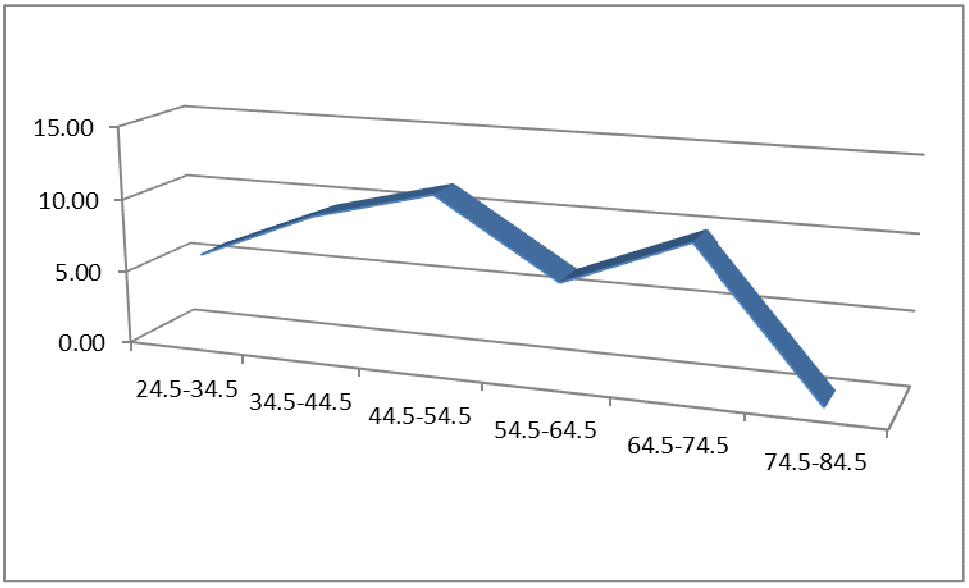


Figure 8: Age Group Percentage of hematemesis

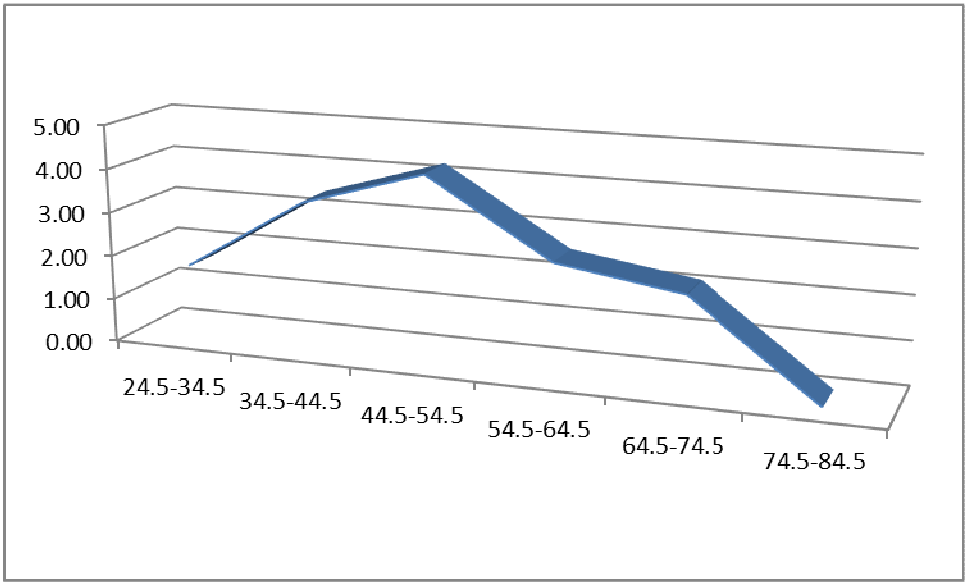


Figure 9: Age Group and Percentage of Chronic Diarrhoea

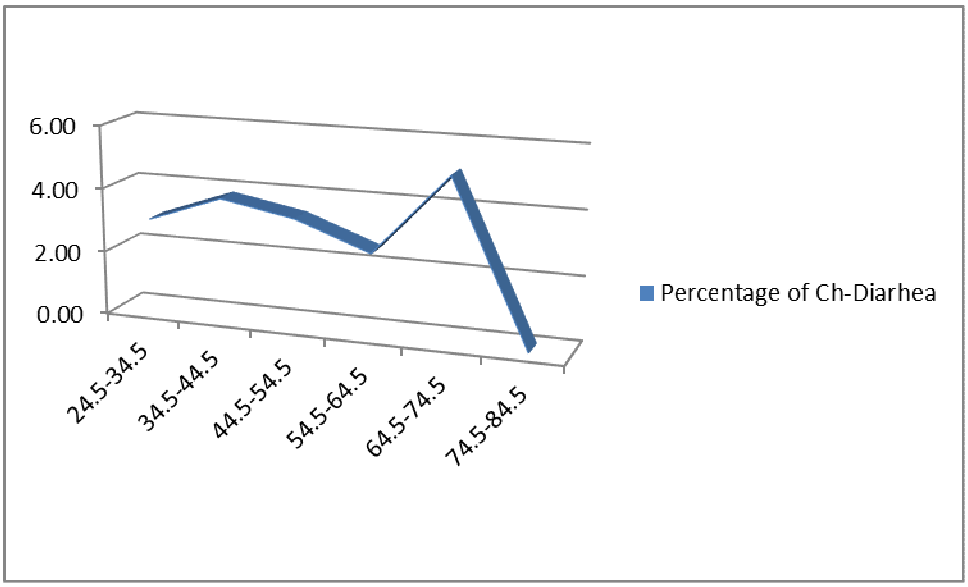


Figure 10: Age Group and Percentage of dyspepsia

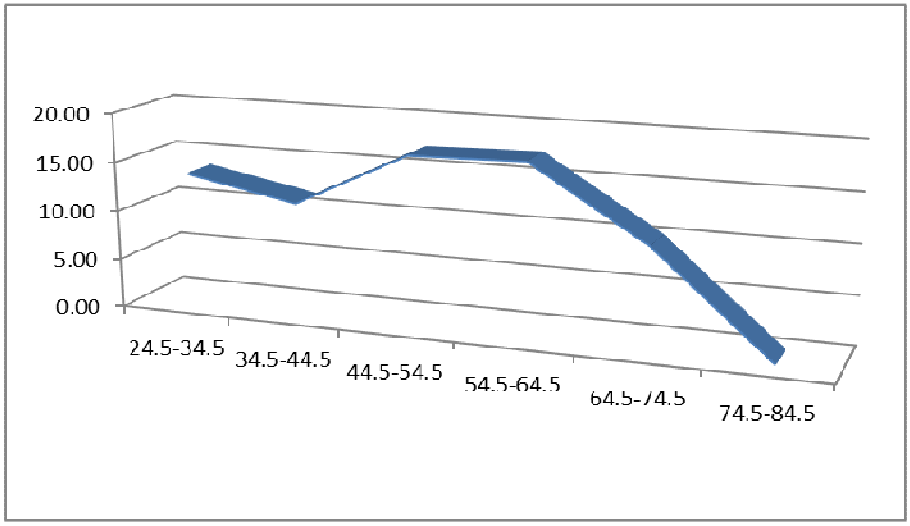
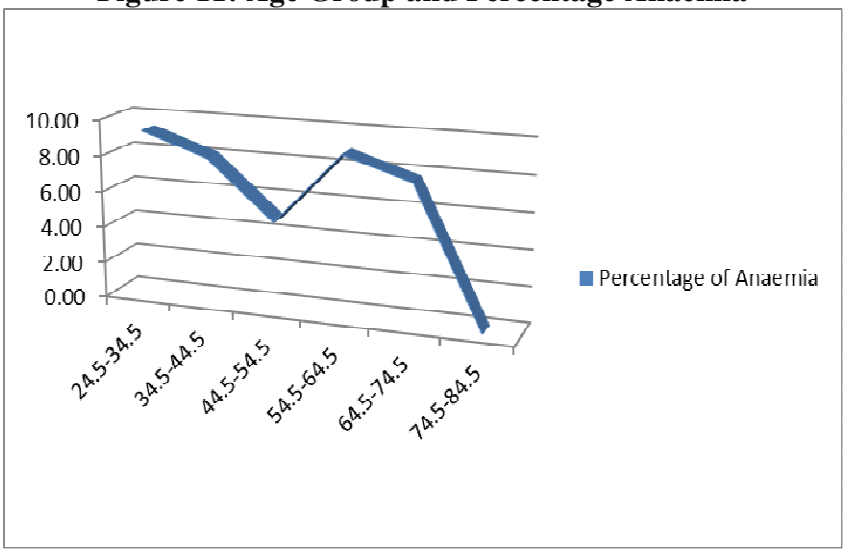


Figure 11: Age Group and Percentage Anaemia



Econometric Analysis: Binomial Logistic regression was applied to assess the relationship between different illnesses and the age and sex of the patients. The result shows that age has no significant relationship with any of the diseases whereas the sex of the patients had a significant relationship with unexplained abdominal pain, Melena, and reflux as highlighted in the respective tables.

Table IV: Heart Burn

	Co-efficient	P>z	[95% Conf.
Age	.1939653	0.126	-.0542238
Sex	-.2099335	0.221	-.5458246
_cons	1.389018	0.000	1.06103

The Results of the Logistic Model shows that both age and sex have no significant relationship with Heartburn.

Table V: Dyspepsia

	Co-efficient	P>z	[95% Conf.
Age	.0024099	0.984	.7923984
Sex	.0112756	0.943	.7444361
_cons	-1.129653	0.000	.2392076

Table VI: Anaemia

	Co-efficient	P>z	[95% Conf.
Age	-.242344	0.154	-.5752037
Sex	.1094319	0.629	-.3342337
_cons	-2.12561	0.000	-2.556338

Table VII: Abdominal pain

	Co-efficient	P>z	[95% Conf.
Age	.1271149	0.461	-.2104898
Sex	-.3596715	0.081	-.7631518
_cons	-1.968349	0.000	-2.363978

Results of the Regression model show that the probability of unexplained abdominal pain decreases by 0.35 in the case of males respondents as compared to females (Table 7).

Table VIII: Dysphagia

	Co-efficient	P>z	[95% Conf.
Age	-.0585166	0.756	-.4275178
Sex	.1352106	0.595	-.3630033
_cons	-2.497268	0.000	-2.985982

Table IX: Melena

	Co-efficient	P>z	[95% Conf.
Age	-.0652633	0.752	-.4695906
Sex	.5192419	0.099	-.0985227
_cons	-3.036389	0.000	-3.646585

The results indicate that Melena had a significant relationship with the Sex of the respondents at 10 percent of significance level. The probability of Melena increases by 51% in case of male respondents as compare to females (Table 9).

Table X: GERD

	Co-efficient	P>z	[95% Conf.
Age	-.0214901	0.898	-.3489556
Sex	-.3867442	0.052	-.7771245
_cons	-1.798607	0.000	-2.17711

The result binary logistic model indicates that GERD had a significant relationship with the Sex of the respondents. The probability of Reflux decreases by 0.38% in the case of male respondents as compared to females (Table 10).

Table XI: Hematemesis

	Co-efficient	P>z	[95% Conf.
Age	-.1012053	0.774	-.791644
Sex	.2136225	0.663	-.747325
_cons	-3.921671	0.000	-4.863665

Table XII: Chronic Diarrhoea

	Co-efficient	P>z	[95% Conf.
Age	.0560064	0.858	-.5584605
Sex	.4967101	0.302	-.4466845
_cons	-3.998258	0.000	-4.936074

Table xiii: Occurrence of Disease by Sex**:**

Variable Disease	**Disease Category**	**Gender (Frequency)**		**Likelihood Ratio Chi2**	
		Female	Male	Female	Male
Unexplained Anaemia	With Alarm features	26	130	-4	4.2
	Without alarm features	244	1099	4.2	-4.2
Persistent vomiting	With alarm features	35	116	17.7	-15.1
	Without alarm features	235	1,113	-15.4	15.7
Dysphagia	With alarm features	20	103	-4.1	4.4
	Without alarm features	250	1,126	4.3	-4.3
Melena	With alarm features	12	89	-10	12.8
	Without alarm features	258	1,140	12.4	-12.5
GERD	With alarm features	38	123	20.5	-17.4
	Without alarm features	232	1,106	-17.7	18.1
Chronic diarrhoea	Alarming	5	37	-4.1	5.3
	Non-alarming	265	1,192	5.2	-5.1
Hematemesis	Alarming	5	28	-1.7	1.9
	Non-alarming	265	1,201	1.9	-1.9

Table XIV : Pearson Correlation for age and different diseases

Disease	**Age**
PMD	-0.0107
Dyspepsia	-0.0050
Anemia	-0.0302
Unexplained abdominal pain	0.0196
Dysphagia	-0.0050
Melena	0.0048
GERD	-0.0111
Hematemesis	-0.0099
Chronic diarrhea	0.0078

Results of Pearson Correlation shows that none of these indications has significant relationship with age of the respondent as shown in (Table 14).

Table XV: Cohort Study

Disease	**With alarm features (%)**	**Without alarm features (%)**	**Risk ration (95% confidence interval)**
PMD	369(24.6)	1130(75.6)	0.92
Dyspepsia	212 (14)	1287(86)	1.55
Unexplained Anaemia	156(10.4)	1343(89.6)	1.1
Unexplained abdominal pain	151(10)	1348(90)	1.13
Dysphagia	123(8)	1376(92)	7.1
Melena	101(6.7)	1398 (93.3)	0.99
GERD	161(10.7)	1338(89.3)	1.1
Hematemesis	33(2)	1466(98)	1.5

The study used Stata version 14 to apply the Cohort Study technique to assess the relationship between the dependent variable i.e. listed diseases and the independent variable i.e. endoscopic findings. The study adopted the Cohort Study technique because it tells us about the direction of causality and measure incidence.

Results of the Cohort study show that among the selected symptoms like PMD, and Melena has a negative relationship with endoscopic findings as the Odd ratio or Risk ration for these variables is less than one. Whereas dyspepsia, Anaemia, unexplained abdominal, Dysphagia, GERD, and hematemesis have a positive relationship with endoscopic findings (Table 15).

DISCUSSION:

Upper GI endoscopy is a useful diagnostic tool for the detection of several upper GI-related disorders especially malignancy. The widespread use of this technique has made possible early and timely detection of many GI-related disorders especially ulcers, infections, mucosal tears, neoplastic growths, etc. which may present with nonspecific and often confusing symptoms in the patients[6,7]. However since the establishment of open-access endoscopy units, many inappropriate symptoms are used to perform endoscopies that increase the burden on health care systems and since being an invasive procedure, it confers harm to the patient as well[8]. The study recruited patients requesting upper GI endoscopy for various indications. Likely findings were assessed and the usefulness of endoscopy for evaluation of the symptoms was correlated.

Our study recruited adult patients aged 24 to 80 showing upper GI-related disorders are common in all age groups. The maximum no. of patients belonged to the age group 55 to 65. About 82%of the total no. of patients were males and only 18% were females showing males tend to have more upper GI-related symptoms.

The commonest referring indication of the procedure in our study was retrosternal burning not responsive to 4 weeks acid-suppressive therapy this was followed by chronic dyspepsia, GERD, dysphagia, unexplained anemia, and unexplained abdominal pain. Other less common indications were melena, chronic diarrhea, and hematemesis. This is in contrast to all other previous studies performed in similar settings[9]. This indicates increased use of endoscopy as an early diagnostic tool in contrast to conventional radiography.[10]

Our study showed 43.5% of the endoscopies performed for the above-mentioned indications had normal findings. The percentage of normal endoscopies were common in patients aged 25 to 45, whereas the age group 65 to 75 had the most abnormal findings. This feature was similar to other studies performed on population with similar demographic profiles [11,12]. In contrast to them, however, Pylori gastritis was uncommon in our setup[11,12].

The commonest diagnosis attained was Pan hemorrhagic gastritis found in 27.2% of the population. This was followed by reflux esophagitis, and gastric carcinoma. Esophageal carcinoma was a less common finding. Similarly, Pylori gastritis, esophageal candidiasis, gastric and duodenal ulcers, and duodenitis were all uncommon findings. Achalasia, undifferentiated growth of duodenum, villous atrophy and Barrett`s esophagus were the least common diagnosis.

Similar studies done in the western population show duodenal ulcers, gastric ulcers, and gastritis to be more frequent findings[13].Another frequent cause for upper GI bleeding was Mallory Weiss tear likely linked to alcoholism[14]. We did not find this in any patient. In our population pan hemorrhagic gastritis and malignancies are a frequent show up. Further studies are needed in this direction to assess the cause. We assessed the distribution of various indications against the age groups and found some interesting outcomes not previously assessed[8]. Retrosternal burning was common in younger patients i.e. 25 to 55year age group whereas older patients did not have this indication. The same was the case with melena which was commonly found in 35 to 55-year-olds. Unexplained anemia was common in two age groups 25 to 35 years and 55 to 75 years. The symptom of Post-meal distension was common in the age group 45 to 55 and 65 onwards; younger patients 35 to 45 had the least frequency. Unexplained abdominal pain was common in 45 to 65-year age group. Dysphagia was common in 55 to 65-year-olds and it was low in younger patients. Nonvariceal bleeds were found in 45 to 55-year-olds and the

elderly, whereas it was the lowest in 55 to 65-year age groups. Similarly, chronic diarrhea and dyspepsia were also common indications in the 55 to 65-year age group and were less common in younger individuals.

The data was further analyzed using Binomial Logistic regression to assess the relationship between different indications and age and sex of the patients. The result shows that age has no significant relationship with any of the diseases whereas sex of the patients had a significant relationship with unexplained abdominal pain and reflux as they were common in females and

On further analysis, results of the Cohort study showed that the amongst the selected indications post-meal distension and Melena had a negative relationship with endoscopic findings as the Odd ratio or Risk ration for these variables is less than one this undermines the usefulness of these indications for a likely positive finding in subsequent endoscopy, Whereas chronic dyspepsia, unexplained Anaemia, unexplained abdominal pain, Dysphagia, GERD and hematemesis have a positive relationship with endoscopic findings. This shows that endoscopy should be performed without hesitation in patients with chronic dyspepsia, unexplained Anaemia, unexplained abdominal pain, Dysphagia, GERD, and hematemesis.

Endoscopy is a useful but expensive modality of investigation. The cost of the equipment and its maintenance is high; therefore, appropriate referrals are needed in our setup. The high no. of normal endoscopies in younger patients is noteworthy and so is the symptom of post-meal distension and melena in younger patients[15]. The finding of melena as an inappropriate indication is in contrast to the recommendations; one reason could be inappropriate sample collection for proper evaluation[16]. It has been recommended that such patients should undergo colonoscopy instead as they commonly harbor colorectal tumors which cannot be identified by endoscopy alone[17].

CONCLUSION:

An endoscopy is a useful tool but the number of normal endoscopies in younger patients is high. Symptoms like post-meal distension and melena found due to improper sample collection are misleading indications especially in younger patients, whereas dyspepsia nonresponsive to 4 weeks acid-suppressive therapy, unexplained anemia, unexplained abdominal pain, dysphagia and GERD, and hematemesis are all valid indications regardless of age.

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