

## **The Study of Gastro-Oesophageal Reflux Disease (GERD) in an Urban area in Zambia.**

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### **Abstract**

Hiatal hernias are more common in Western countries compared to the African countries. In the Western states the frequency of hiatus hernia increases with age, from patients younger than 40 years to patients older than 70 years. This is because of muscle weakening and loss of elasticity as people age goes towards the 70s, thus this age tends to predispose to hiatus hernia. The thinking is that with decreasing tissue elasticity, the gastric cardia may not return to its normal position below the diaphragmatic hiatus following a normal swallow. Loss of muscle tone around the diaphragmatic opening also may make it more patulous. Burrkitt et al also suggest that in the Western world, fiber-depleted diet leads to a state of chronic constipation and straining during bowel movement, which could explain the higher incidence of this condition in Western countries. It is also believed that Hiatal hernias are more common in women than in men. This might relate to the intra-abdominal forces exerted in pregnancy. Para esophageal hernias generally tend to enlarge with time, and sometimes the entire stomach is found within the chest. The risk of these hernias in the West, becoming incarcerated, leading to strangulation or perforation, is approximately 5%. These tendencies are not entirely the same in Zambia. We present our findings.

**Key Words:** Diaphragm, Epigastric, Hiatus, Hernia, Pain, Reflux.

### **BACKGROUND**

The Chingola and Chililabombwe areas are an urban area on the Copperbelt region of Zambia. This area is a melting pot with a mixture of people from all parts of the country. People have come in pursuit of jobs and a better standard of living. It is called the rural urban migration. Also present in the population are people from other parts of the world who are providing services or working as expatriates in the Mining Industries that are well established in this part of Zambia. The Konkola Copper Mines (KCM) Plc has been the most prominent mining

company. It has two hospitals namely; Nchanga south hospital in Chingola and Konkola mine hospital in Chililabombwe. Chingola has a population of about 200, 000 people while Chililabombwe has a population of about 100,000 people.

The need for GERD, endoscopy services in this urban area of Zambia was highly essential: It was cheaper and safer than a barium meal. Before this service was provided, those who needed the GERD service had to raise money and fly out of the country mainly to the Republic of South Africa or travel to Lusaka the capital city of Zambia and visit the UTH or one or two private establishments to get endoscopy done.

In order to meet this need, the Mining Company acquired the endoscopic equipment in June, 2001.

An Endoscopic Unit was established at Nchanga South Hospital. The equipment became operational from January 2002. It was primarily intended for miners and their dependants. However people from all parts of Zambia came for this service.

We present data on the GERD findings among the Chingola /Chililabombwe patients and people from all parts of Zambia who came for this service in whom we provided endoscopy services. This was a sort of Modernizing Endoscopy Services (MES)[1],[3].

We also believe that the challenges of providing such a service in this part of the world would make it available for future research.

## **MATERIALS AND METHODS:**

### **Equipment**

The following equipment was used for GERD:

- Olympus GIF-XQ40 DES Gastrofibrescope.
- Olympus GIF-P30 DES Gastrofibrescope.
- Olympus BF-IT 10 Bronchoscope
- Olympus BF- P30 Bronchoscope
- Olympus CLV-U40 Light source
- Olympus light source As back up.

These scopes were attachable to:

- Camera control unit OTV-S6C
- Camera head OTV-S6K-1
- Video adaptor A10-T2
- All these were connected to a Sony TV monitor, PVN-20M2E.

The equipment for cleaning and sterilization were:

1. Endoscope reprocessor EW30
2. Endosonic cleaner T4A for cleaning small pieces.

### **Space for the Endoscopy service.**

A spacious room was identified in the newly refurbished wing of the hospital, It was furnished, air conditioned and the pipe works for the Endosonic reprocessor EW30 and the ultrasonic cleaner were done, this included the fitting of special filters for water purification.

### **The service for endoscopy where the GERD patients were attended to.**

At any Endoscopy service; there were two nurses who looked after the patients who needed endoscopy, two technicians looked after the equipment and the two surgeons performed the endoscopy on the patients who came to the Hospital for this service.

Patients were drawn from Chingola, Chililabombwe and the rest of the Copperbelt.

Patients with abdominal complaints were first seen in the outpatient clinic or the wards by a consultant surgeon and referred to the endoscopy unit as the need arose. The patients were then given an appointment and instructions for the procedure.

### **Selection of the study**

Patients who needed the endoscopy were of various demands and for various problems. The GERD was noted to be common and was particularly affecting women and men in our Copperbelt region. We did not know the presenting complaints, the signs and symptoms, the figures and many other causes of GERDS that occur on this region. It was our aim to discover how GERDS occurs here.

## **RESULTS**

### **Endoscopy Services provided.**

From 2002 to 2007 Six hundred and thirteen patients underwent the endoscopy service; these were mainly miners, their dependants and a few outsiders who had come to know of the availability of the endoscopy service (Table I).

**Table I. Endoscopy Services provided**

Year	Gastrosocopy	Colonoscopy	Laryngoscopy	Bronchoscopy	Total
2002	114	00	00	00	114
2003	112	02	03	09	126
2004	88	01	06	00	95
2005	76	02	07	00	85
2006	85	07	04	00	96
2007	96	01	00	01	98
Total	570	13	20	10	613

### **The GERD Patients.**

#### ***The age Distribution and frequency***

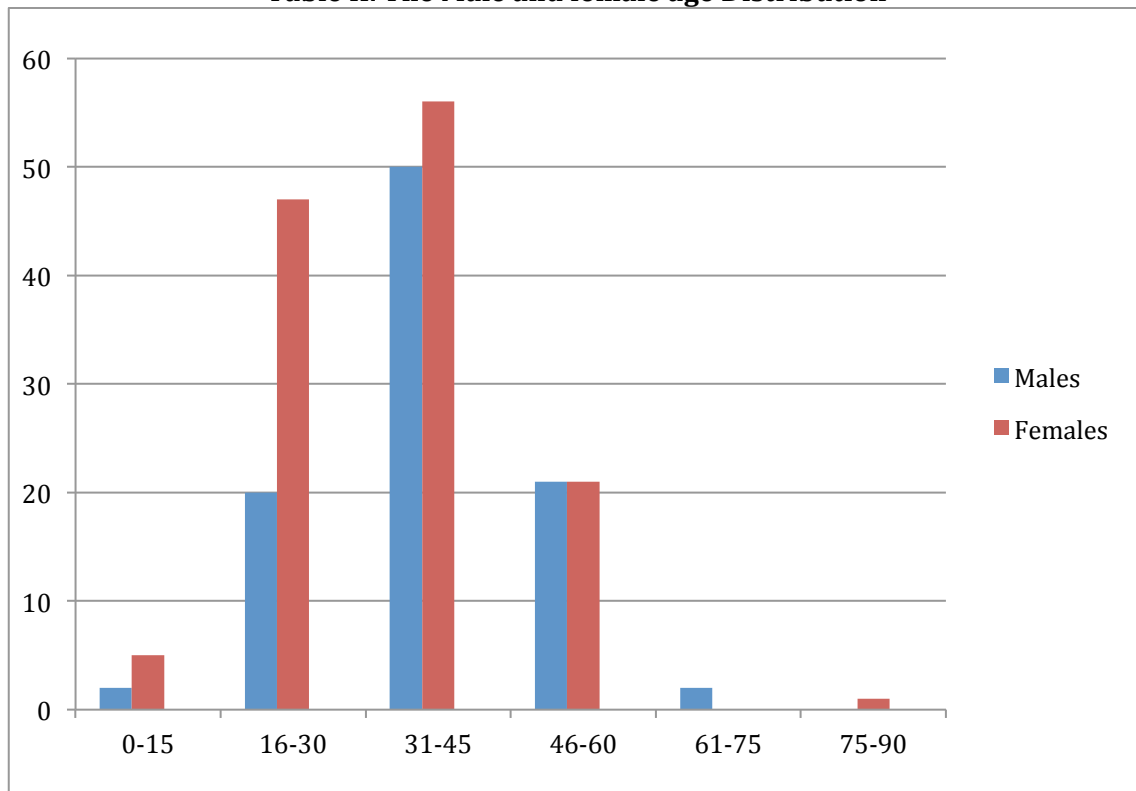
The patients who came into the service specifically for GERD complaints or suspicions were 226. In the younger patients there were more females with GERD than males, but from about 31 to 60 years of age the actual Male to Female rate was almost 1:1. Their ages presentation is in shown on Table II.

Generally there were 130 females and 96 males patients (M:F =1:1.4) ( Table III)

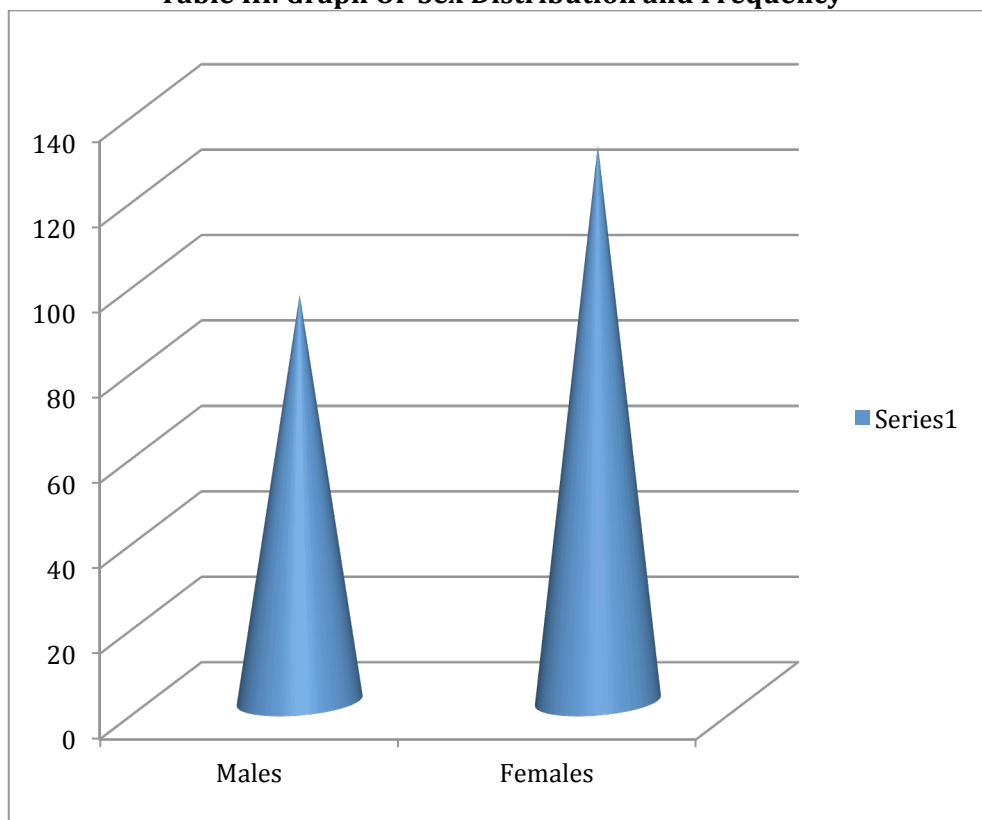
The youngest patient was 10 years old and the oldest was 83 years old. The mean age was at 36 years of age. The largest number of patients were those aged 35 to 40 years of age; there was a total of 75 patients(33%).

There was a special observation in that there were 35(15.5%) patients who were of the old range of 45 to 49 years of age. Their distribution was outstanding in the general flow of age distribution.(Table IV)

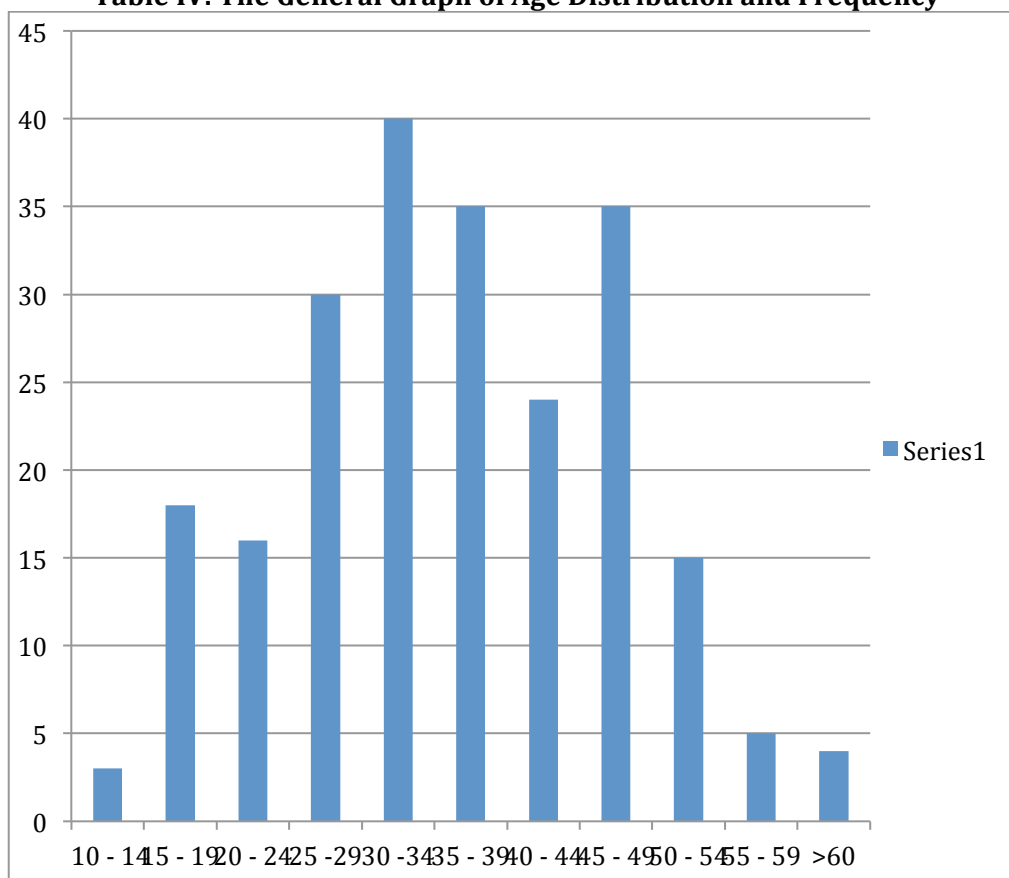
**Table II. The Male and female age Distribution**



**Table III. Graph Of Sex Distribution and Frequency**



**Table IV. The General Graph of Age Distribution and Frequency**

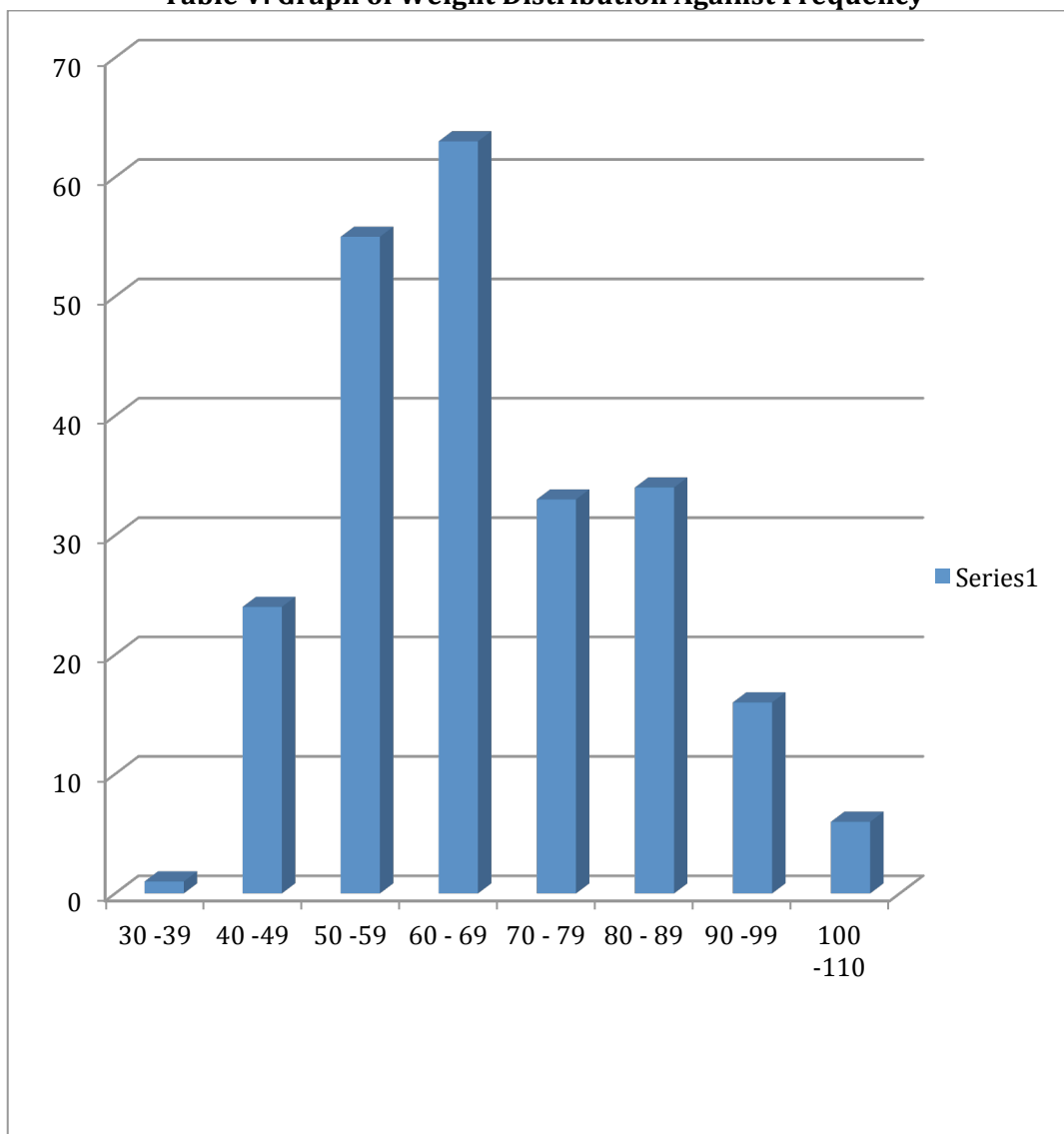


**The Weight Distribution and frequency**

The largest numbers of the most heavy weight patients were those weighing 60 to 69 kilograms. It was equal weight in the heavy patients: There were 31 females and 31 males.

However those patients who weighed 50 to59 Kilograms showed a distribution of 68.5 % being females and only 31.5% were males. This was a significant difference (Table V)

**Table V. Graph of Weight Distribution Against Frequency**

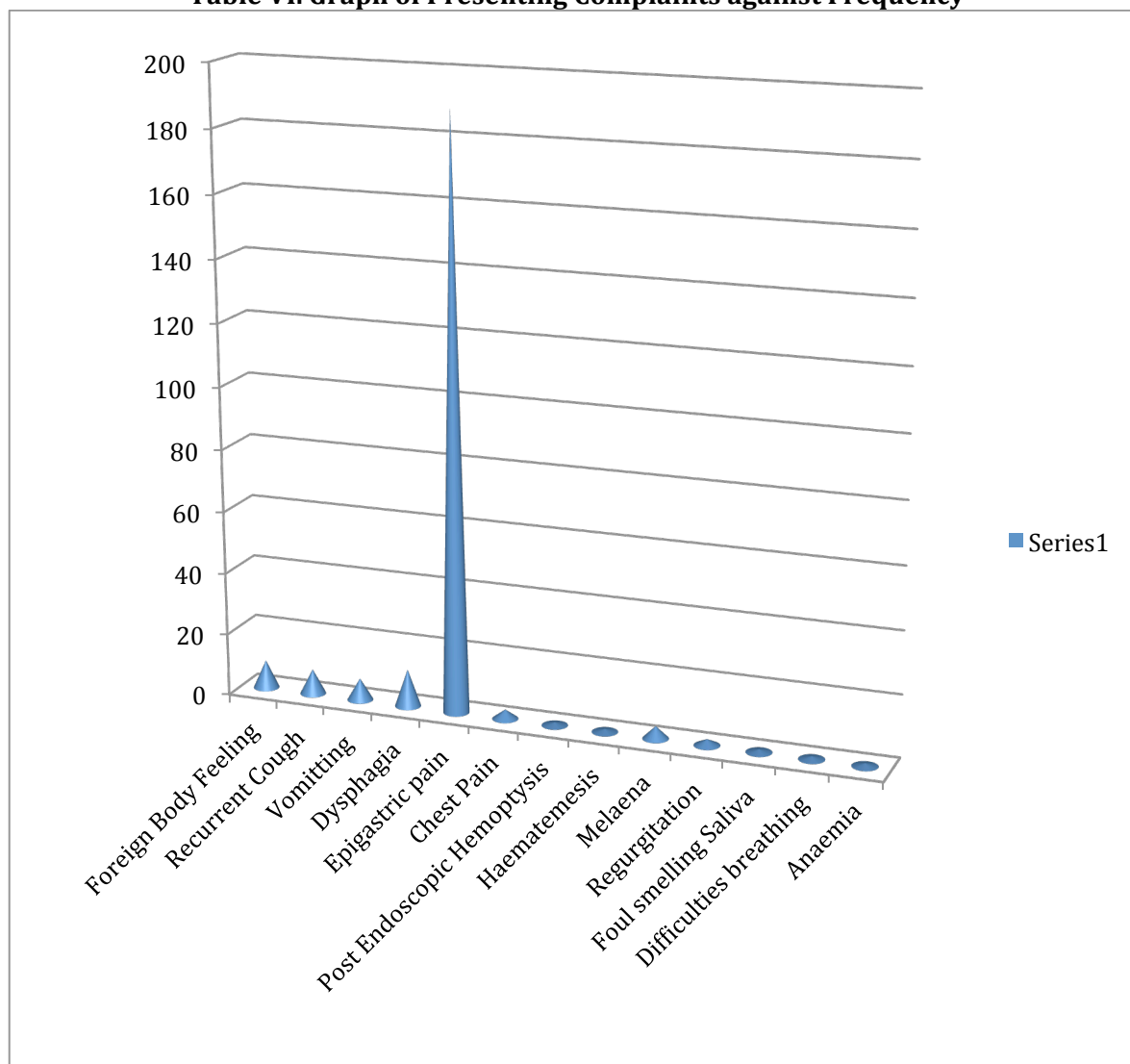


**Presenting Complaints**

The patients had come in with many complaints that brought them to the clinic. The most common complaint was Epigastric pain; this was in 81% of the patients. (See this on Table VI).

Of these patients 53% were females and 47% were males. The M:F ratio was 1:1.2.

**Table VI. Graph of Presenting Complaints against Frequency**



The patient who had severe Epigastric pain, the 81% ,were distributed according to their age Table VII The Most severe Epigastric pain in the patients

Age	25 - 30	31- 35	36- 40	41- 45	46-50
Number of patients	29	43	32	13	0

### Duration of illness

In some of our patients, once the illness started it lasted only for three weeks. For example we had 12 patents whose illness thus lasted. However in some patients' the illness lasted for a period of up to 30 years. The longest illness occurred in one patient. The majority of our patients (65%) had a duration of illness, on average, from zero month to 30 months . The next long illness was seen patients who came with pain for 31 months and 60 months(2.5years to 5years) of illness. This was the case in 15.5% of patients. A small group had a duration of illness for 91 to 120 months (7.5years to10years) that made 8.8% of our patients.( Table VIII)

**Table VIII. Duration of Illness of GERD Patients**

<b>Duration of illness(Months)</b>	<b>0.0 to 30</b>	<b>31 to 60</b>	<b>61 to 90</b>	<b>91 to 120</b>	<b>121 to 150</b>	<b>151 to 180</b>	<b>181 to 210</b>	<b>211 to 240</b>	<b>241 to 270</b>	<b>271 to 300</b>	<b>301 to 330</b>	<b>331 to 360</b>	<b>361 to 390</b>	<b>391 to 420</b>
<b>No. of Patients</b>	<b>147</b>	<b>35</b>	<b>07</b>	<b>20</b>	<b>04</b>	<b>05</b>	<b>01</b>	<b>01</b>	<b>0</b>	<b>01</b>	<b>0</b>	<b>01</b>	<b>0</b>	<b>01</b>

We looked at the Majority of the patient with the duration of illness for the period of less than one month to the thirtieth month.

We found that it was clear the majority of ill patients had pain between weeks of illness to 5 months. We got 60 (40.8%) patients. See Table IX.

**Table IX. Duration of Illness in the Majority group**

<b>Duration of illness(Months)</b>	<b>0 To 5</b>	<b>6 To 10</b>	<b>11 To 15</b>	<b>16 To 20</b>	<b>21 To 25</b>	<b>26 To 30</b>
<b>No. of Patients(%)</b>	<b>60 (40.8)</b>	<b>27 (18.4)</b>	<b>32 (21.8)</b>	<b>04 (2.7)</b>	<b>24 (16.3)</b>	<b>0</b>

### **The Various clinical findings in our patients.**

There were 226 patients with GERD.

The Hiatus Hernia patients with gastric reflux were 114(50.4%) of cases in our patients.

We also found patients with Oesophagitis or Gastritis. In some patients it was in either one or both. We got 180(79.6%) of our patient who came in for endoscopy.

All the patients who came for endoscopy also went through the H Pylorus test. This was done at the Chingola Endoscopy unit. It revealed that 57(25.2%) cases were H Pylorus positive.

### **DISCUSSION**

When it was started this service was indeed a Modernising Endoscopy Services(MES) and we know that several services like this one does take place in several areas in Zambia. However, the truth is that there is a lack of service-related endoscopy data which is routinely available so that we can collect for our study or indeed get in touch with other services in the country. Without this data, the Zambia endoscopy services cannot have a true understanding of the services comparing to UK [1], [3]. In countries like UK and USA, all or most of all, endoscopy units are successful in contacting together by now as the Modernising Endoscopy Services (MES). The researchers are in touch by telephone or Email and their results, we believe, are available by and large but they still have some communication problems [3]. In Zambia these services are not in touch.



With this situation our write up is based on our experience on MES in Chingola Zambia.

**On Epidemiology:** The epidemiologic estimates of the prevalence of GERD are based primarily on the typical symptoms of heartburn and regurgitation. A systematic review found the prevalence of GERD to be 10–20% of the Western world with a lower prevalence in Asia. Clinically troublesome heartburn is seen in about 6% of the population [15]. The GERD situation in Zambia is known to be present but studies have not been done extensively so far. Heartburn as a common problem has been recorded by the Zambia Daily Nation news paper [16]. Generally we do not know its prevalence in the country.

Concerning the age distribution in Chingola/Chililabomwe service; the females were more than males as shown in Table III, This difference was not major in that the females were 57.5 % and the males mere 42.5%. In fact the breakdown of the details are of interest (Table II): In the age range of 10 to 30 years, there are more females than men significantly but in the age range of 31 to 45 the difference between men and women is insignificant and particularly when the patients reach the age range of 46 and 60, there is no difference between and females in their GERD illness.

In the American and the Western presentation the frequency of hiatus hernia increases with age, from 10% in patients younger than 40 years to 70% in patients older than 70 years. It is accepted that the prevalence of hiatus hernia parallels that of obesity and that it increases with age[4]. In Japan The incidence of esophageal hiatal hernia is increasing with the increase in the aging population, and approximately 60% of individuals aged more than 50 years are affected with this condition[14]. What we saw was different in that 44.2% were between 25 to 39 years of age. Above this age range the patients become fewer.

Generally, GERD has a prevalence of 10% to 20% in Western Europe and North America. In Zambia we do not have adequate figures.

In terms of body weight we found that the heaviest weight in our sturdy patients were those weighing 60 to 69 kilograms. It was equal between males and females. However, those below 60 Kg, the women were the majority and they weighed between 50 to 59 Kg. In the Western Europe and North America GERD has a prevalence of 10% to 20% [7]. In Zambia we do not have these details.

In the Western world the women were the high weight patients who developed GERD. The most common cause is obesity [5],[9]. In these countries they insist on Weight loss recommended for GERD patients who are overweight or have had recent weight gain[15]. Our patients were seen to develop GERD at a weight of 50 to 59 Kilograms of weight. It does raise our thinking that weight may not be our major cause of GERD among our people. We are not too sure of what causes GERD among our people.

The Western world have several causes suggested. Sontag [12] proposes several ideas like that the chronic hiatal hernia is (a) the cause of more than 90 % of the GERD that stalks the Western world; (b) is a direct result of abandoning the popular and worldwide practice of squatting to socialize, eat and defecate; and (c) is a reward for adopting the "civilized" high sitting position on chairs and modern toilets. Burkitt DP has written up that "Hiatus hernia, Diverticular disease of the colon, and gallstones have their maximum prevalence in economically most developed Western countries, and their minimum in Africa. These three diseases are associated not only epidemiologically but also in individual patients. Their

prevalence is closely comparable in black and white Americans today. Evidence is presented to support the hypothesis that each of these diseases is in fact a result of consuming fiber-depleted diets, and it is argued that this accounts for interrelationships" [11]. Here we do have GERD and it seems to be common. What we see is that we do not have the western consuming fiber-depleted diets, ours is the High Fibre consumption of food. It is Maize Food.

Among our patients the terms of pain presentations were that it was the females who complained most: Fifty three percent were females and 47% were males.

The most common complaint among our patients was Epigastric pain. It was followed up by Dysphagia, Foreign body feeling, vomiting and recurrent cough. Chest pain was a very uncommon complaint. It is known that chest pain may be a symptom of GERD, even the presenting symptom itself. We saw very few in our patients. Distinguishing cardiac from non-cardiac chest pain is required before considering GERD as a cause of chest pain. Although the symptom of dysphagia can be associated with uncomplicated GERD, its presence warrants investigation for potential complications including an underlying motility disorder, stricture ring, or malignancy. Atypical symptoms including dyspepsia, epigastric pain, nausea, bloating, and belching may be indicative of GERD but overlap with other conditions [15]. Generally in the Western side the less common symptoms are dysphagia, epigastric or chest pain. This clinical review summarizes the Western current evidence for the diagnosis and management of hiatus hernia [4]. In our study the most severe problem was Epigastric pain in the patients who were aged from 31 to 35 years of age. This was followed up by those who were aged between 36 to 40 years age range. Clearly, among our patients, the severe Epigastric pain is very common in the age range of 31 to 40. In the Western region this severe pain seems to affect the older ages in their 70 s. It is not known how commonly hiatus hernias occur with estimates in North America varying from 10 to 80%.

Hiatal hernia has often been called the "great mimic" because its symptoms can resemble many disorders. For example, a person with this problem can experience dull pains in the chest, shortness of breath (caused by the hernia's effect on the diaphragm), heart palpitations (due to irritation of the vagus nerve), and swallowed food "balling up" and causing discomfort in lower esophagus until it passes on to stomach [10].

We tried to see how long each one of the patients had GERD. The Majority of our patients (65%) were ill for about a week or weeks to about two and half years. In fact 40% were ill with GERD within one week to less than half of a year of illness. This was the majority of the patients who came to the hospital. However some very few patients had illness for up to more than 10 years. A western study presented results for a series of 97 patients, with complete endoscopic follow-up in 79 patients, for a median of 5 years [13].

Gastro esophageal reflux disease affects an estimated 20% of the population in the United States [2]. In Zambia we do not know. At Endoscopy we noticed that gastric reflux in our patients with Hiatic Hernia was present in as much 50.4% of our study patients showing how common this problem in Chingola/Chililabombwe is. Gastro esophageal reflux disease (GERD) is arguably the most common disease encountered by the gastroenterologist. It is equally likely that the primary care providers will find that complaints related to reflux disease constitute a large proportion of their practice [15] anti-reflux treatment plays an unquestioned role in the management of patients with large hiatal hernias [6]. Almost 10% of the patients with chronic

gastro-esophageal reflux have Barrett's esophagus (BE) [8]. We did not see any of our patients developing BE and indeed it is very uncommon among our patients.

We also noticed that Oesophagitis and Gastritis were found in either one or both in 180(79.6%) of our patient who came in for endoscopy.

Many doctors and researchers are convinced that the acid reflux is caused by an H. pylori infection. However there are issues of the use of H Pylori[5]. All our GERD patients underwent the Helicobacter pylori test; We noticed that only 57(25.2%) cases were positive. However some say. Screening for Helicobacter pylori infection is not recommended in GERD patients. Treatment of H. pylori infection is not routinely required as part of anti -reflux therapy [15]. This is because there is low level evidence of this test in GERD.

### CONCLUSION

In Chingola/Chililabombwe when we started the service it was indeed a Modernizing Endoscopy Services (MES) and we know that several services like this one are taking place in several areas in Zambia. However the truth is that there is a lack of service-related endoscopy data which is routinely available so that we can collect for our study or indeed get in touch with other services in the country. We hope in future we will establish this study service.

We have seen conditions that resemble the Western features. But we also see very different features of GERDS in our people. It is our view that further studies should be carried out in this part of the world.

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