Spectrum and Prevalence of GIT Admissions at a Tertiary Hospital in a Resource Poor Setting, Northwestern Nigeria: A Five Year Review

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Abstract— **Background:Gastrointestinal tract diseases cause a significant global health problem, approximately accounts for 8 million deaths per year worldwide. This study aims to describe the pattern of Gastrointestinal (GIT) disease cases seen at thein-service medical wards of the Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, Nigeria.**

Materials and Methods: A retrospective hospital-based review of GIT admission obtained from 1st January 2013 to 31st of December 2017 in the Department of Internal Medicine of Usmanu Danfodiyo University Teaching Hospital Sokoto state Nigeria. The hospital draws its patients from Sokoto and neighboring Kebbi, Zamfara, Katsina and Niger states. Data were extracted from patients' case folders. The data were validated using Microsoft excel version 13 and exported to SPSS version 23.0 (Chicago IL) for windows; for statistical analysis.

Result:There were a total of 1266 GIT patients admitted during the study period, 688(54.3%) were males, and 578(45.7%) were females, with a male to female ratio of 1.2:1. The mean age of the study participants was 39.4 with SD$\pm$ 18.4 and the age range of 1-100 years respectively. The peak age incidence occurred within third-fifth decade accounted for 764(64%) The result indicated that age was found to be a significant factor in association with GIT disorders (X^2 = 481.1, DF = 152, P<0.05).

Conclusion: Determination of the various GI disease conditions and the factors responsible for variability in incidence and outcomes of diseases will allow clinicians, public health professionals, policymakers, and healthcare organizations to intervene in a more scientifically logical way thereby ensuring effective resource allocation to decrease the overall burden of gastrointestinal disease.

Index Terms— **Gastrointestinal, GIT, gastrointestinal disease.**

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I. INTRODUCTION

Gastrointestinal diseases refer to the diseases involving the mouth,esophagus, stomach, small intestine, large intestine, rectum and the accessory organs of digestion, the liver, gallbladder, and pancreas[1].The gastrointestinal system can be affected by various disease conditions which could be infectious, genetic, autoimmune or neoplastic and these disease conditions can present acutely or insidiously[2, 3]. Gastrointestinal diseases cause a significant global health problem, approximately accounting for 8 million deaths per year worldwide[4].Published data are scarce on time trends of gastrointestinal disease in Africa.[5-8]. Most mortality reviews in Nigeria emanated from the south-west [9-13].

Diarrheal disease is the second leading cause of mortality worldwide with an estimated 2.5 billion cases of diarrheaoccurring annually in children under five years of age, nearly one in five child deaths (about 1.5 million)each year is due to diarrheal diseases[14].

Liver disease, one of the gastrointestinal diseases accounts for approximately 2 million deaths per year worldwide, one million due to complications of cirrhosis and one million due to viral hepatitis and hepatocellular carcinoma[15]. Cirrhosis is currently the 11th most common cause of death globally and liver cancer is the 16th leading cause of death; combined, they account for 3.5% of all deaths worldwide. Cirrhosis is within the top 20 causes of disability-adjusted life years and years of life lost and account for 1.6% and 2.1% of the worldwide burden[15].

The study aimed at determining the various types of gastrointestinal diseases commonly seen in our environment. It has the potential to positively influence theplanning of preventive and curative measures as well as educating inhabitants appropriately as a way to reduce the morbidity and mortality associated with the disease conditions.

II. MATERIALS AND METHOD

A retrospective hospital-based review of GIT admission obtained from 1st January 2013 to 31st of December 2017 in the Department of Internal medicine of Usmanu Danfodiyo University Teaching Hospital Sokoto state Nigeria. Data were extracted from patients' case folders. The data were validated using Microsoft excel version 13 and exported it into SPSS version 23.0 (Chicago IL) for windows; for statistical analysis. The data were analyzed for demographic and other clinical characteristics as categorical variables.

Mean and the standard deviation were determined for quantitative variables. All variables were coded as binary dummy variables. For example gender (males = 1, females = 2), and so on. Data were presented as frequency distribution and charts generated for all categorical variables, while Mean and standard deviation were determined for a quantitative variable. Descriptive and inferential statistics (Chi-square Fisher exact test) was applied between demographic, clinical presentation (Independent variables) and GIT cases (dependent variables) $P \leq 0.05$ is considered as statistically significant.

III. RESULTS

A total of 1266 GIT patients admitted during the study period, 688(54.3%) were males, and 578(45.7%) were females, with a male to female ratio of 1.2:1. The mean age of the study participants was 39.4 with SD± 18.4 and the age range of 1-100 years respectively. The peak age incidence occurred within third-fifth decade accounted for 764(64%) **see figure 2**. Majority of the patients were Hausa/Fulani by tribe consisting of 1133(89.5%), 35(2.8%) Yoruba, 32(2.53%) Igbo and other tribes accounted for 66(5.21%) **figure 3.** The proportion of various sources of admission as shown in Table indicate that the majority of patients [921(72.7%)] were admitted through Accident and Emergency while 94(7.4%) were from Medical outpatient department. **Figure 4** indicates the annual trend of GIT cases by gender; 2013 had the highest record of admission 293 cases. Of these admissions, 167(13.19%)were male while 117(9.24%) were female. In 2014 the admission rate recorded was 261where females 144(11.37%) were higher than males 117(9.24%). Table 2 illustrates the distribution of the top ten GIT diseases as seen on the medical wards of UDUTH. Three hundred and eighty-five (30%) cases were due to chronic liver diseases, 370(29.2%) were due to Dyspepsia, 240(19%) due to Diarrheal diseases, 61(4.8%) abdominal Tuberculosis(TB), 58(4.6%) Intra-abdominal malignancies,47(3.7%) Acute cholecystitis, 22(1.7%) Human Immunodeficiency Virus/Acquired Immunodeficiency syndrome (HIV/AIDS), 21(1.7%) Septiecaemia, 11(0.9%) Acute viral hepatitis and Upper GI bleeding accounted for 10(0.8%). Four hundred and eighty-four (38.2%) patientsdeveloped complications during admission. These complications were grouped according to the systems involved. One hundred and sixty-three (12.9%) patients developed Gastrointestinal (GIT) complications. Hematemesis accounted for 150(11.8%), Neuropsychiatric [(predominantly hepatic encephalopathy) 72(5.7%)]. **See table 3**. The frequency of the outcomes of the study participants was depicted in **table 4**. A total of 811(64%) were formally discharged, of these Five hundredand twenty-six (41.5%) patients completely recovered at the end ofhospitalization, 247(19.5%) were stable and 38(3%) were improved. Deaths on admission accounted for 236(18.6%), 199(15.7%) signed against medical advice, 13(1%) absconded while 7(0.6%) were transferred to other units for further treatment. Table 5 shows the cross-tabulation of GIT disease and age categories of patients; the majority of chronic liver diseases occurred within the age group of 31-34 and 41-50 years which accounted for 185(48%), while Dyspepsia182 (49%) was observed higher within the age range of 21-30 and 31-40 years. Age was found to be a significant factor in GIT disorders ($X^2 = 481.1$, DF = 152, P<0.05). A correlation chart as illustrated in figure 4, indicates that the distribution clinical outcome significantly varied between male and female (P<0.05). Among 688 participants, 169(24.6%) mortalities were male while out of 578 females 67(11.6%) died. Majority of the discharged patients 289(50.0%) were females while the males constituted 237(34.4%). **Contingency table 6** Shows the distribution of GIT versus gender; among 385 chronic liver disease cases 310(80.5%) were male, 75(19.5%) were female, out of 370 dyspeptic patients females had the highest proportion 227(61.40) when compared to male 143(61.4%). Based on the result obtained there was a statistically significant association between GIT cases and gender ($X^2 = 185.308$, Df = 19, P<0.05). Three hundred and eighty-five patients diagnosed with chronic liver disease, the mortality cases accounted for 147(38.2%), 3(0.80%) absconded, 103(26.8%) were discharged, 4(1%) improved, 79(20.5%) signed against medical advice, 47(12.2%) were stable at discharge while 2(0.5%) were transferred to other services.**See table 7**
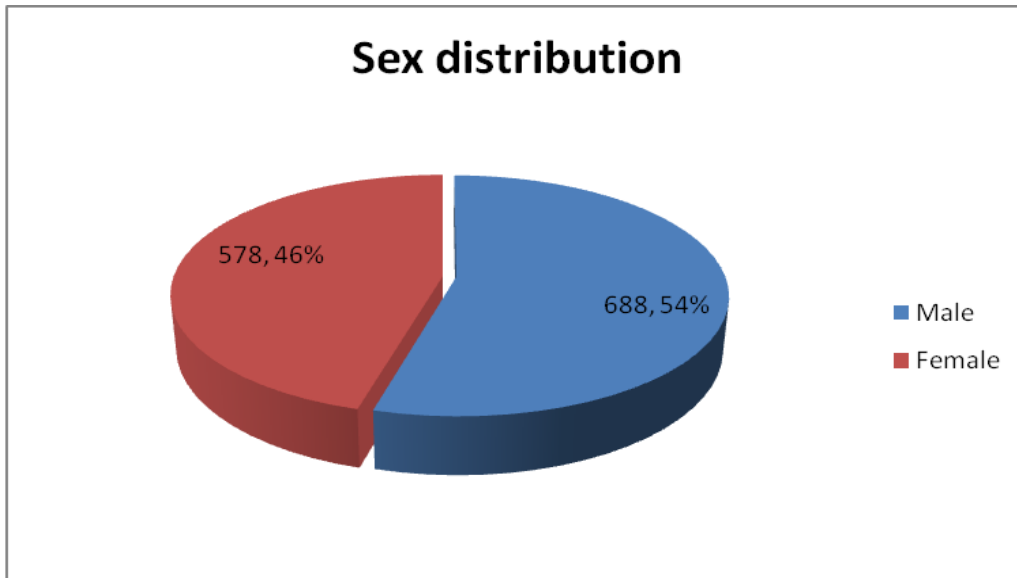
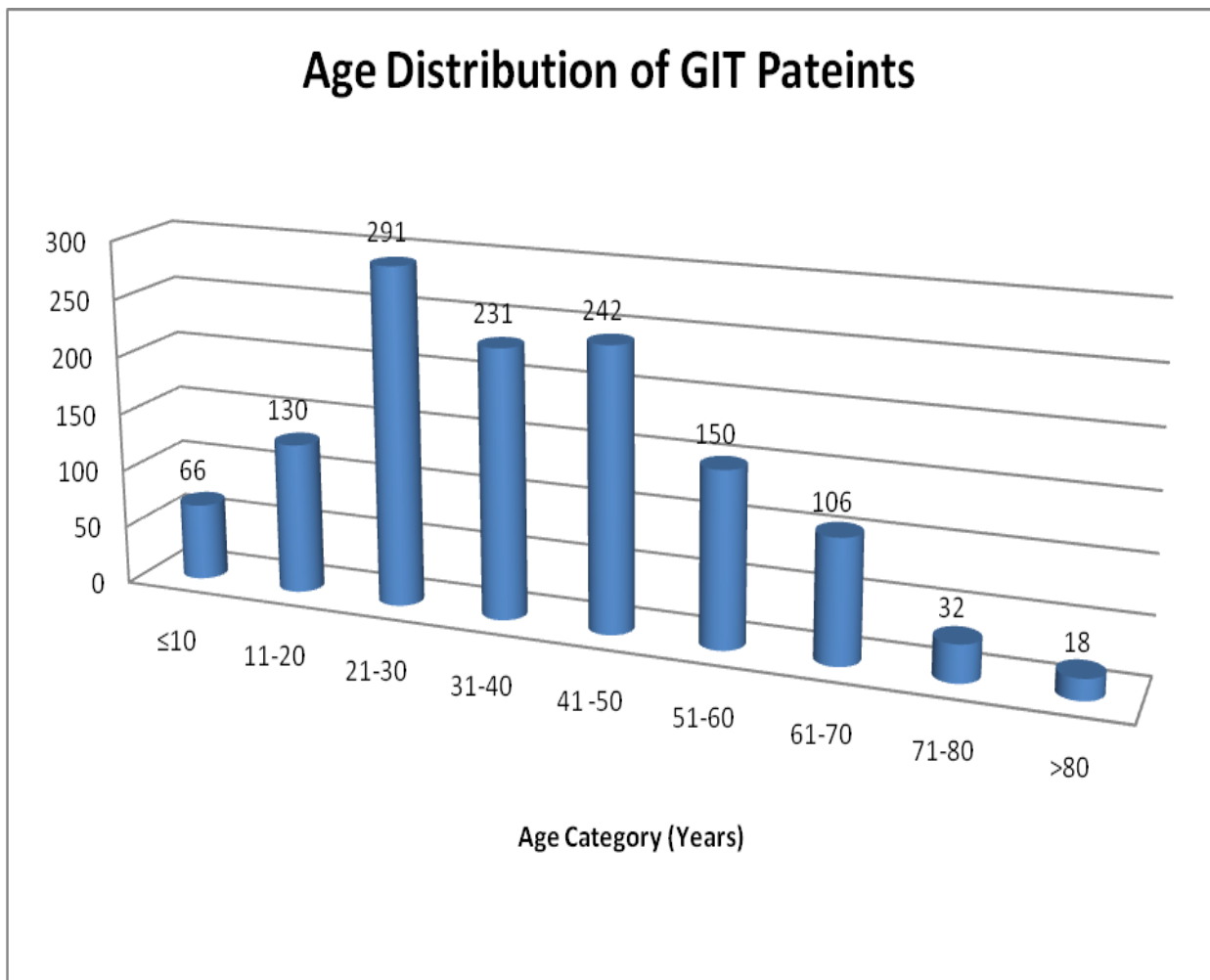**Figure 1: Sex distribution of study participants**

Figure 2: Age distribution of the participants

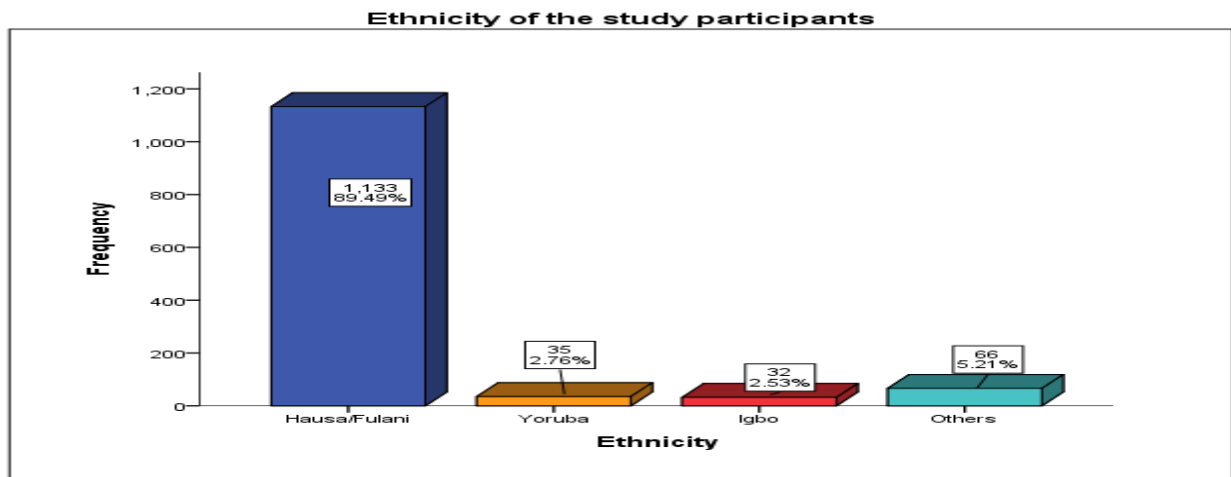**Figure 3: Ethnicity of the participants**

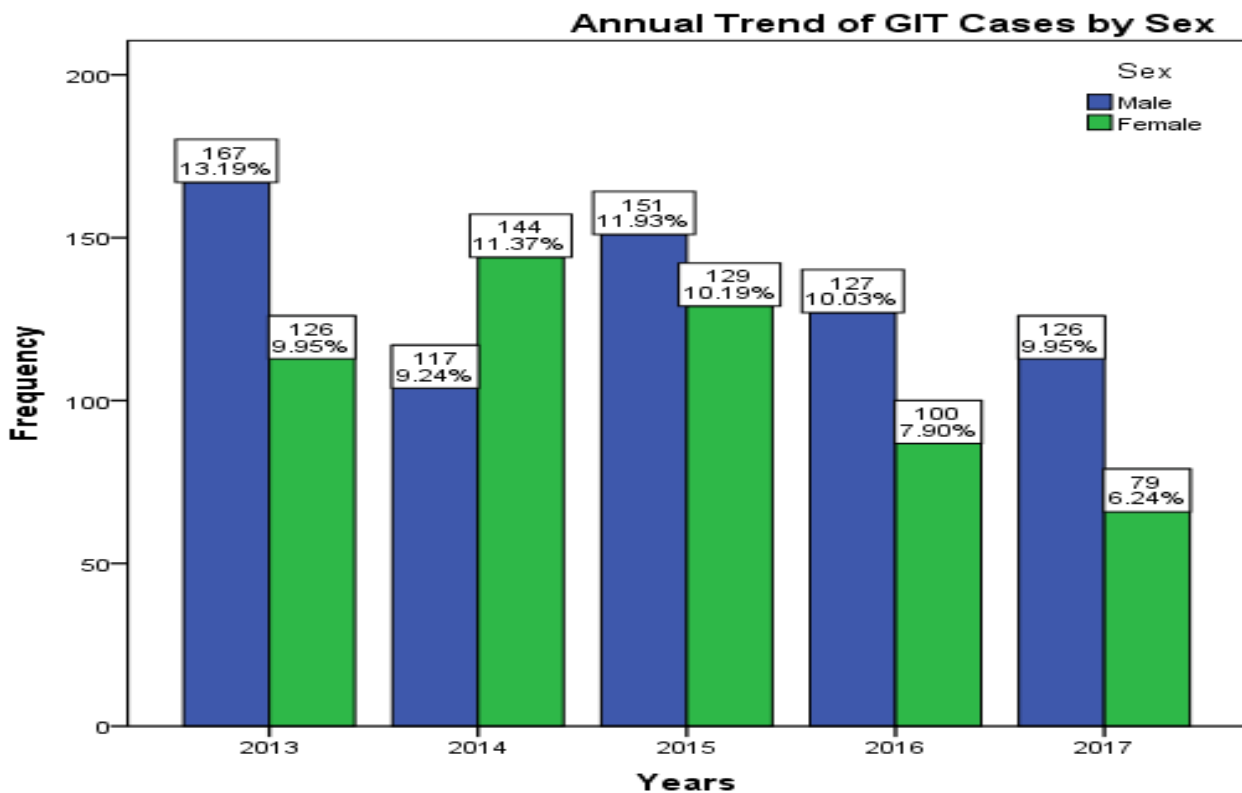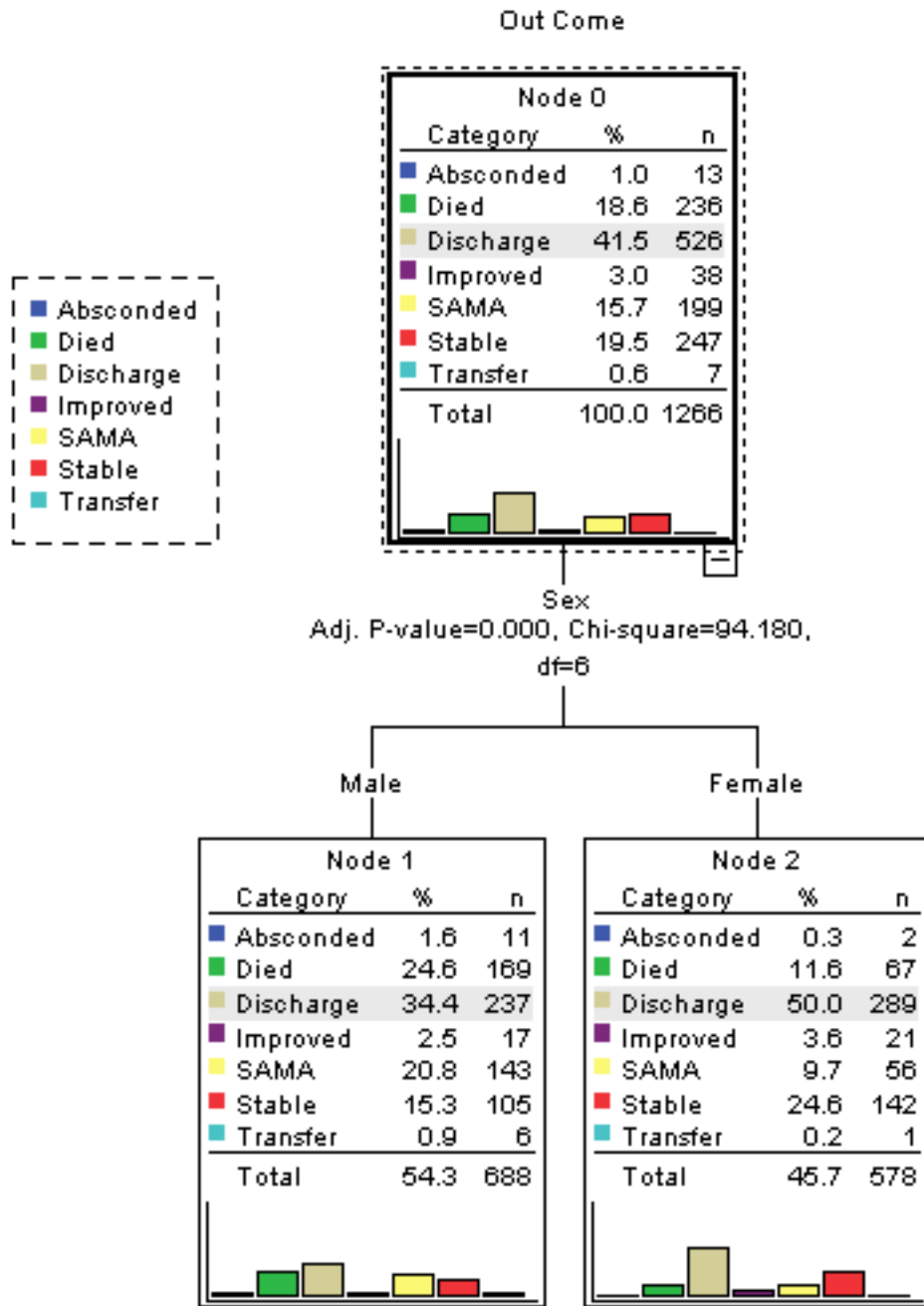**Figure 4: Annual trend of GIT cases by sex**

Figure 5: Correlation chart between Independent variable (gender) and dependent variable(Outcome)

Table 1: Source of Admission of GIT patients

Sources	Frequency	Percent
A&E	921	72.7
MOPD	94	7.4
CSO	78	6.2
EPU	64	5.1
SOPD	56	4.4
GEC	27	2.1

GYNAE	18	1.4
GOPD	5	0.4
CTU	1	0.1
ENT	1	0.1
POPD	1	0.1
Total	1266	100

A&E = Accident and Emergency, EPU =Emergency Paediatric Unit, SOPD= Surgical Out Patients Department, GEC= , GYNAE= Gynaecology Emergency Clinic GOPD= General Out Patients Department, CTU = Cardiothoracic Unit, ENT= Ear nose and throat, POPD= Paediatric Out Patient Department

Table 2: Distribution ofTop Ten Gastrointestinal tract disorders

Diagnosis	Frequency	Percent
Chronic Liver Disease	385	30.4
Dyspepsia	370	29.2
Diarrheal disease	259	20.5
Abdominal Tuberculosis (TB)	61	4.8
Intra-abdominal malignancies	58	4.6
Acute cholecystitis	47	3.7
HIV/AIDS	22	1.7
Septicemia	21	1.7
Acute viral hepatitis	11	0.9
Upper GI bleeding	10	0.8

Table 3: Complication presented by the study participant

Complication	Frequency	Percent
None	782	61.8
GIT	163	12.9
Hematemesis	150	11.8
NeuroPsychiatric	72	5.7
Genitourinary/Renal	67	5.3
Cardiovascular	16	1.3
Endocrine	10	0.8
Infectious Diseases.	5	0.4
Musculoskeletal	1	0.1
Total	1266	100

Table 4: Clinical Outcome of the study participants

Outcome	Frequency	Percent
Discharged	526	41.5
Stable	247	19.5
Died	236	18.6
SAMA	199	15.7
Improved	38	3

Absconded	13	1
Transfer	7	0.6
Total	1266	100

Table 5: Age distribution versus GIT diseases

Diagnosis	≤10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	>80	Total
Chronic Liver Disease	0	17(4.40%)	54(14.00%)	84(21.80%)	101(26.20%)	63(16.40%)	48(12.50%)	12(3.10%)	6(1.60%)	385
Dyspepsia	3(0.80%)	47(12.70%)	107(28.90%)	75(20.30%)	72(19.50%)	38(10.30%)	21(5.70%)	6(1.60%)	1(0.30%)	370
Diarrheal disease	13(5.00%)	36(13.90%)	75(29.00%)	29(11.20%)	38(14.70%)	29(11.20%)	24(9.30%)	9(3.50%)	6(2.30%)	259
Abdominal TB	16(26.20%)	15(24.60%)	5(8.20%)	9(14.80%)	6(9.80%)	5(8.20%)	3(4.90%)	2(3.30%)	0	61
Intra-abdominal malignancies	3(5.10%)	5(8.50%)	8(13.60%)	13(22.00%)	13(22.00%)	9(15.30%)	5(8.50%)	2(3.40%)	1(1.70%)	59
Acute cholecystitis	19(40.40%)	5(10.60%)	9(19.10%)	6(12.80%)	4(8.50%)	0	3(6.40%)	0	1(2.10%)	47
RVD(HIV/AIDS)	0	1(4.50%)	11(50.00%)	6(27.30%)	4(18.20%)	0	0	0	0	22
Septiecaemia	5(23.80%)	1(4.80%)	7(33.30%)	1(4.80%)	2(9.50%)	3(14.30%)	1(4.80%)	0	1(4.80%)	21
Chi-square	$X^2 = 481.1$, Df $= 152$, P<0.05									

Table 6: Top Ten Sex distribution by GIT cases

Diagnosis		Male	Female	Total
Abdominal TB	Count	31	30	61
	Percent	50.80%	49.20%	100.00%
Dyspepsia	Count	143	227	370
	Percent	38.60%	61.40%	100.00%
Acute cholecystitis	Count	26	21	47
	Percent	55.30%	44.70%	100.00%
Acute viral hepatitis	Count	9	2	11
	Percent	81.80%	18.20%	100.00%
Intra-abdominal malignancies	Count	32	27	59
	Percent	54.20%	45.80%	100.00%
Chronic Liver Disease	Count	310	75	385
	Percent	80.50%	19.50%	100.00%
Diarrheal disease	Count	110	149	259
	Percent	42.50%	57.50%	100.00%
HIV/AIDS	Count	8	14	22
	Percent	36.40%	63.60%	100.00%
Septicemia	Count	11	10	21
	Percent	52.40%	47.60%	100.00%
Upper GI bleeding	Count	2	8	10
	Percent	20.00%	80.00%	100.00%
Chi-square	$X^2 = 185.308$, Df $= 19$, P<0.05			

Table 7: Distribution of clinical outcome versus GIT Disorders

GIT Diseases Types		Absconded	Died	Discharged	Improved	SAMA	Stable	Transfer	Total
Abdominal Tuberculosis (TB)	Count	1	6	12	1	25	16	0	61
	Percent	1.60%	9.80%	19.70%	1.60%	41.00%	26.20%	0.00%	100.00%

Dyspepsia	Count	1	14	197	16	40	100	2	370
	Percent	0.30%	3.80%	53.20%	4.30%	10.80%	27.00%	0.50%	100.00%
Acute cholecystitis	Count	1	7	23	0	4	10	2	47
	Percent	2.10%	14.90%	48.90%	0.00%	8.50%	21.30%	4.30%	100.00%
Acute viral hepatitis	Count	0	6	4	0	1	0	0	11
	Percent	0.00%	54.50%	36.40%	0.00%	9.10%	0.00%	0.00%	100.00%
Intra-abdominal malignancies	Count	0	20	13	1	10	14	1	59
	Percent	0.00%	33.90%	22.00%	1.70%	16.90%	23.70%	1.70%	100.00%
Chronic Liver Disease	Count	3	147	103	4	79	47	2	385
	Percent	0.80%	38.20%	26.80%	1.00%	20.50%	12.20%	0.50%	100.00%
Diarrheal disease	Count	5	26	149	15	28	36	0	259
	Percent	1.90%	10.00%	57.50%	5.80%	10.80%	13.90%	0.00%	100.00%
HIV/AIDS	Count	0	1	9	1	6	5	0	22
	Percent	0.00%	4.50%	40.90%	4.50%	27.30%	22.70%	0.00%	100.00%
Septicemia	Count	1	4	6	0	2	8	0	21
	Percent	4.80%	19.00%	28.60%	0.00%	9.50%	38.10%	0.00%	100.00%
Upper GI bleeding	Count	0	4	3	0	2	1	0	10
	Percent	0.00%	40.00%	30.00%	0.00%	20.00%	10.00%	0.00%	100.00%
Chi-square	$X^2 = 471.050$, Df = 114, P<0.05								

Our findings revealed that the rate of hospitalization within the five years under review was higher in our institution with a total number of 1266 cases when compared with other studies of similar duration from Nigeria. This may be explained by relative paucity and of health care facilities in the North-Western Nigeria compared to the Southern parts of the country resulting in overcrowding in the relatively fewer available hospitals. Seventy-two percent of the patients were admitted via Accident and Emergency (A&E) unit. Many of the GIT diseases such as CLD and some forms of dyspepsia, are chronic in nature and tend to present with complications at the A&E; the trends were higher in our study when compared with a report in Ido-Ekiti Nigeria[16].Another study conducted from the gastroenterologyout-patient clinic in the southern part of the countryby Oluwagbenga et al [17] documented 679 cases over similar period.Perhaps these variations occurred as a result of differences in watersanitation, hygiene and other environmental factors since majority of the diseases were communicable in nature. This study found a male to female ratio of 1.2:1; suggesting thatgenerally males suffer from gastrointestinal diseases more than females. Our finding is in agreement withthose of Oluwagbenga et al. [17]in Ado-Ekiti, Lesi et al.[6] in Lagos, Adeleye et al.[7] in Sagamu and Jemilohun et al.[8] inOgbomoso. They all had more males than females, with male to female ratios of 1.08:1, 1.17:1, 1.3: 1 and 1.4:1

In this study the mean age of presentation of the study participants was 39.4 ± 18.4, this was in line with what was documented byJemilohun et al.[8] 38.9 ±18.39. In contrast to other local studies, our report slightly differed from the findings by Adeleye et al[7], 42.0 ±15.50 years and 43.8±16.32Oluwagbenga et al[17]

The 6 leading gastrointestinal diseases in this review were chronic liver disease, dyspepsia, diarrheal disease, abdominal TB, intra-abdominal malignancies and cholecystitis.

Based on the findings from this study liver diseases accounted for 29.2%.The high proportion could be due to the high endemicity of hepatitis B viral hepatitis in the region[18, 19]which is also a significant contributor to liver and bile duct cancers. Our finding differs from that reported by Adeleye et al in which chronic liver disease accounted for 12.4% of GIT diseases seen in their hospital [7].An estimated 3–4 million people are infected with hepatitis C virus (HCV) each year with a total of 130–170 million people chronically infected internationally[20].Dyspepsia was the second commonest gastrointestinal disease in our study and accounted for 19% of patients.Our finding is similar to that of Oguntoye et al. from South western Nigeria[17].However, Nwokediuko inEnugu, South-East Nigeria documented dyspepsia as being responsible for 81.9% of indications for upper GI endoscopy in South eastern Nigeria[21]. Various Hospital-based studies from Europe and the USA have

showndyspepsia to be a leading cause of GI diseases[22-24].Hospital data depicting causes of morbidity and mortality are important parameters for confirmation of the geographical burden of disease and public health planning, involving programmatic needs, assessing and re-evaluation of health policies. In this study, the overall mortality due to GI diseases stood at 18.6%. Among males, 24.6%of 688 died during the period of our study while a comparatively lower proportion of 11.6% among 578 females died within the same period. Mortality among men was much higher compared to female, majority of them presenting with terminal HBV related chronic liver diseases. Okoroiwu et al also from Nigeria, reported 8.3% of the overall mortality due to GI Diseases[25].

IV. CONCLUSION

GIT diseases exert an enormous burden of morbidity and mortality on the North Western populations and urgent attention is required to mitigate further devastation. Majority of the GI diseases. Concerted efforts at improving water sanitation, hygiene coupled with health education and vaccination against hepatitis B Virus will go a long way to reduce this burden. Determination of the various GI disease conditions and the factors responsible for variability in incidence and outcomes of diseases will allow clinicians, public health professionals, policymakers, and healthcare organizations to intervene in a more logical way making effective use of resource allocation to decrease the overall burdenof gastrointestinal diseases.

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