Original

A 5-Year Retrospective Overview of Gastroenterology In-Patient Clinical Spectrum, Outcome and Survival Profile in a Tropical Urban Tertiary Health Facility

[1]Titilope A Bamikefa, [2]Abosede G Adeyeye, [3]Peter K Uduagbamen, [2]Oluwadamilola A. Odeyemi, [4]Adewale Muritala Ibrahim, [5] Andrew Olusola Anjorin, [6]Afolabi A Segun, [7]Faramade Ifedola

[1]Renal Unit UniOsun Teaching Hospital Osogbo, Osun State/Department of Medicine, College of Health Sciences Osun State University Osogbo.
[2]Department of Medicine, UniOsun Teaching Hospital, Osogbo, Osun State/ College of Health Sciences Osun State University Osogbo.
[3]Division of Nephrology and Hypertension, Department of Internal Medicine, Bowen University/Bowen University Teaching Hospital, Ogbomosho, Nigeria.
[4]Department of Family Medicine College of Health Sciences Osun State University Osogbo.
[5]Department of Histopathology, College of Health Sciences Osun State University Osogbo.
[6]Department of Obstetrics & Gynecology UniOsun Teaching Hospital, Osogbo, Osun State
[7]Department of Community Medicine UniOsun Teaching Hospital, Osogbo, Osun State

Corresponding author: Titilope Adetoun Bamikefa, Renal Unit UniOsun Teaching Hospital Osogbo, Osun State/ Department of Medicine.titilopegloria@gmail.com

Article history: Received 16 April 2025, Reviewed 27 April 2025, Accepted for publication 02 June 2025

Abstract

Background: Diseases with gastrointestinal tract involvement have continued to be a major public health concern globally and indigenously with its ballooning proportions. This study unraveled the spectrum of in-hospital medical disorders attributable to diseases affecting the gastrointestinal tract and their distinctive attributes.
Methods: A 5-year retrospective assessment of the clinical entries and in-hospital charts of adult medical intakes with gastrointestinal disorders was undertaken. Socio-demographic attributes, spectrum of gastrointestinal tracts disorders and outcome measures were retrieved and appraised. Statistical significance was drawn at a p-value of <0.05.
Results: In all, 239 patients with diverse gastrointestinal tract affectation were admitted with male gender predominance (n=137,57.3%). Cumulative mean age of the participants was 46.3 ± 17.3 years with a higher value in females compared to males (47.9 ± 18.4yrs vs 45.1±16.3 yrs). Mean length of hospital stay was 6.33 ± 5.1 days. Hepatitis B-induced liver cirrhosis (n=77,32.2%) and gastroenteritis (n=43, 18.0%) predominated as the principal indications for admission. Crude mortality rate was 17.6% with a tilt towards the male gender (n=34,14.2%). Outcome of hospitalisation was statistically influenced by gender (p=0.006) and stratification into hepatitis/non-hepatitis related disorder (p=0.019) on regression studies. Survival on Kaplan Meier's plots were significantly influenced by gender (p=0.001) and clinical diagnosis (p=0.025)
Conclusion: Hepatitis B-induced chronic liver disease and gastroenteritis predominated as the preponderant diagnosis among gastroenterology medical in-patients. Tenacious utilization of effective preventive strategies from primary to tertiary level is expedient to curtail their spiraling prevalence.

Keywords: Gastroenterology, clinical spectrum, admission, survival, Nigeria

How to cite this article

Bamikefa TA, Adeyeye AG, Uduagbamen PK, Odeyemi OA, Ibrahim MA, Anjorin AO, Afolabi SA, Ifedola FA 5- Year Retrospective Overview of Gastroenterology In-Patient Clinical Spectrum, Outcome and Survival Profile in a Tropical Urban Tertiary Health Facility. The Nigerian Health Journal 2025; 25(2): 757 – 770. https://doi.org/10.71637/tnhj.v25i2.1081

Introduction

The cascading magnitude of medical admissions with affectation of the gastrointestinal tracts (GIT) and its ancillary organs which is currently responsible for close to 10 million deaths globally has sparked public health outcry across all quarters.[1,2] Global disability-adjusted life-years (DALY) of 4% and regional DALY of 0.1-1.1% (low & low-middle income economies) have been attributed to GIT disorders according to a recent study.[2]

Debates and practical approaches on how best to effectively curtail its astronomical increase remains a continuous exercise.[3] Gastrointestinal tract disorders are reserved for diseases with affectation of the digestive tract as well as those affecting the hepatobiliary organs and the pancreas.[4] The global and local prevalence of GIT disorders emanates from interplay between divergent but often closely related factors ranging from individual specific factors, environmental as well as prevalent government policies.

The western world with its robust information gathering and disease surveillance protocols has enabled formulation of impactful population-based policies unlike the third-world countries where such is lacking.[3,5] Relentless surveys of both local and global pattern of GIT disorder becomes imperative in the face of its constantly evolving dynamics.[3,5] Poor investment in social/health infrastructures, policy makers ineptitude, redundant health coverage schemes, illiteracy and prevalent cultural bias are some of the factors enabling promulgation of GIT disorders in the tropics including Nigeria .[2,5,6]

Globally, disorders of the GIT have been reported to be present in 1 of every 5 persons with higher disease burden in Africa and other emerging economies.[7] Sub-Saharan Africa is the largest repository of liver cirrhosis globally.[8] Studies dedicated to medical admissions from disorders of GIT is sparse in Africa with most of the studies carried out on hospitalization from all medical causes rather than from specific systemic affectation.[9,10] Gastrointestinal tract diseases were responsible for 4.4% of medical admissions in a prospective study carried out in Ethiopia.[9]

A recent meta-analysis on medical admissions in Africa identified disorders of the digestive system as the 3rd leading cause of hospitalization and mortality with a prevalence of 13.9% and 16.2% respectively.[10] In Nigeria prevalence of admissions from disorders of the GIT tract ranged between 3.7% to 11.7% in the Southern part of the country although the prevalence in the Northen part of the country could not ascertained from a recent retrospective review of medical admissions where a total of 1266 admissions from GIT disorders were reported.[11,12,13]

In order to fill the knowledge gaps relating to medical admissions from GIT disorders which is limited in this vicinity, this study which appears to be the pioneer on gastroenterology hospitalisation in this health facility will in-retrospect evaluate the clinical spectrum and outcome of GIT disorders among medical in-patients over a 5-year span. None of the prior studies on hospitalisation resulting from disorders of the digestive system in this clime evaluated the survival attributes of medical in-patients with digestive diseases which this study will undertake to bring to limelight pertinent correlates of distinctive demographic and clinical features on the survival of medical intakes with disorders of the GIT and will therefore serve as a reference for future surveys.[9,10,11,12]

Methods

Study design.

The specific attributes as it relates to demography and clinical presentation of all adult intakes with GIT diseases who were domiciled within the medical wards of UniOsun Teaching Hospital Osogbo over a 5-year duration beginning from January 1st 2017 to December 31st 2021 were extracted in retrospect following an in-depth review of their clinical entries from admission till discharge.

Study Area

Strategically situated in the Centre of Osogbo the Osun State capital is a 200-bedded UniOsun Teaching Hospital which renders tertiary level health care services to its populace of over 11 million. It also provides support services to other health delivery facilities across all levels within its immediate and far environs.

Study Population

The 239 participants included in the study were adults (aged 16 years and above) whose clinical diagnosis were validated by medical consultants following standard diagnostic criteria as applicable after detailed interaction via the numerous entry points into the medical wards.

Print ISSN: 0189-9287 Online ISSN: 2992-345X

Study exclusion criteria
Patients with GIT disorder who had incomplete/missing data and those with unvalidated diagnoses as described above were excluded from the study

Sampling method
Purposive sampling of adult patients with GIT disorders whose retrieved medical records fulfilled the selection criteria was employed in this study

Data Collection
The demographic and clinical features obtained using a pre-formed data extrication format were age, gender, occupation, marital status, year/month of admission, route of admission, date of admission, diagnosis at admission, number of medical specialties involved, duration of hospitalisation, clinical outcome and year of mortality. The definitive diagnosis supported by applicable clinical and laboratory investigations made by the attending physicians and corroborated by the medical consultants 'were utilised in this study. ICD-I0 stratification was used to group the clinical diagnosis.[14] The clinical diagnosis was further stratified based on presence/absence of hepatitis B&C and other GIT disorders without it to enable comparison.

Ethical Clearance
The Ethics and Research Committee of UniOsun Teaching Osogbo, Nigeria granted the approval for the study with reference number - UTH/REC/2024/06/951

Data Analysis
The data retrieved were interpreted using Statistical Product and Service Solutions (SPSS) version 25 (IBM Inc.) Frequency and percentages were used to present qualitative variables while means, standard deviation and median were employed in the presentation of quantitative variables. Chi square/Fisher's Exacts and Student T test were employed in the comparison of categorical and continuous data respectively. Categorisation of clinico-demographic parameters across gender and age-groups were made to enable comparison. The effect of specific demographic and clinical attributes on the duration of hospitalisation and clinical outcome were evaluated using regression analysis as appropriate. Survival graphs depicting effects of clinico-demographic parameters on duration of hospital stay were drawn. Statistical significance was set at p-value of < 0.05. Missing/incomplete data were excluded from the analysis.

Results
Within the 5-years under purview, 239 out of the total 2340 patients admitted had disorders of the GIT with a prevalence rate of 10.2%. There were more male (n=137,57.3%) compared to the female (n=102, 42.7%) with a M: F ratio of 1.3:1. The yearly gender variation in admission from GIT disorders is as shown with male predominating in 4 out of the 5 years with no statistical significance (p=0.424). (Fig 1) The years with highest number of gastroenterology intakes were 2019 and 2020 with each contributing 24.7% (n=59). The cumulative mean age was 46.3 ± 17.3 years with a higher value in females (47.9 ± 18.4years) compared to males (45.1± 16.3 years). Their age ranged between 16 and 97 years. The young (18-44 years) were principally affected (n=106,44.4%) remotely followed by the middle age group (45-64 years) which constituted 36.4% (n=87) of the medical in-patients with GIT disorders. There was equal gender affectation among those < 18 years and >65 years while male predominated in the other age-groups.

The duration of hospitalisation ranged between 1 and 36 days with an overall mean of 6.33 ± 5.1 days with a slightly lower value in male (6.20 ± 4.73 days) compared to female (6.50 ± 5.5 days). A major proportion of gastroenterology in-patients (n=172, 72.3%) were confined for ≤ 7 days with male preponderance (42.4% vs. 29.8%). (Table 1). The male patients were more likely to have hepatitis B&C related GIT disorders (X^2=8.187, p=0.032), likely to pass through the accident and emergency unit into the medical wards (X^2=10.39, p=0.032), likely to be discharged (X^2= 15.122, p=0.002) and be admitted towards the last quarter/early part of the year (X^2=29.56, p=0.003). (Table 1). The other socio-demographic parameters are as illustrated in Table 1.

Majority of patients with GIT disorders belonging to the young (18-44 years) and middle age-groups (45-64 years) were admitted in years 2021 and 2019 respectively (Table 2) The largest gastroenterology geriatrics admission was in year 2019 (n=12,5%) closely followed by year 2021

Print ISSN: 0189-9287 Online ISSN: 2992-345X

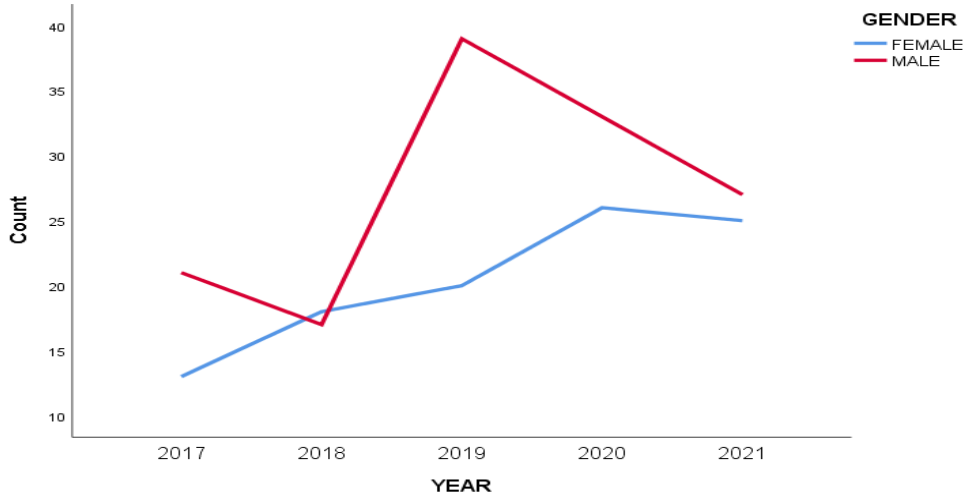

Fig 1 Yearly gender variations of Gastroenterology admissions

Table 1 Clinico-anthropologic attributes of Gastroenterology in-patients across gender from January 1st 2017 to December 31st 2021. Nigeria (n=239)

Attributes	Male n (%)	Female n (%)	Total n (%)	X^2	P-value
Age (yrs)	45.1± 16.3	47.9 ± 18.4	46.3 ± 17.3	1.618	0.205
Duration on Hospitalisation (days)	6.2 ± 4.7	6.5 ± 5.5	6.3 ± 5.1	0.214	0.694
Age group (yrs)					
<18	4 (1.6)	4 (1.7)	8 (3.3)	1.261	0.741
18-44	63 (26.4)	43 (18.0)	106 (44.4)		
45-64	51 (21.3)	36 (15.1)	87 (36.4)		
>65	19 (7.9)	19 (7.9)	38 (15.9)		
Total	137 (57.3)	102 (42.7)	239 (100.0)		
Marital Status					
Single	20 (8.3)	12 (5.0)	32 (13.4)	4.462	0.154
Married	117(49.0)	87 (36.4)	204 (85.4)		
Widow	0	3 (1.3)	3 (1.3)		
Occupation					
Civil Servant	31 (13.0)	25 (10.4)	56 (23.4)	44.539	**<0.001***
Trader	34 (14.2)	49 (20.5)	83 (34.7)		
Student	15 (6.3)	12 (5.0)	27 (11.3)		
Artisan	41 (17.2)	8 (3.3)	49 (20.5)		
Retired	14 (5.8)	5 (2.1)	19 (7.9)		
Dependent	2 (0.8)	3 (1.2)	5 (2.0)		
Hepatitis/Non hepatitis related					
Hepatitis B	52 (21.8)	25 (10.5)	77 (32.2)	8.187#	**0.032***
Hepatitis C	13 (5.4)	9 (3.8)	22 (9.2)		
Hepatitis B &C	0	3 (1.3)	3 (1.3)		
Others	72 (30.1)	65 (27.2)	137 (57.3)		

Print ISSN: 0189-9287 Online ISSN: 2992-345X

Attributes	Male n (%)	Female n (%)	Total n (%)	X^2	P-value
Admission Route					
A &E	134 (56.1)	93 (38.9)	227 (95.0)	10.395	**0.032***
MOPD	2 (0.8)	7 (2.9)	9 (3.7)		
PNW	0	1 (0.4)	1 (0.4)		
Renal	1 (0.4)	1 (0.4)	2 (0.8)		
Month of admission					
January-March	39 (16.3)	17 (7.2)	56 (23.5)	29.560	**0.003***
April-June	33 (13.9)	35 (14.7)	68 (27.6)		
July-September	25 (10.5)	28 (11.8)	53 (22.3)		
Oct- December	40 (16.8)	22 (9.2)	62 (26.0)		
Duration on hospitalisation (days)					
1-7	101 (42.4)	71 (29.8)	172 (72.3)	1.663	0.732
8-14	24 (10.1)	20 (8.4)	44 (18.5)		
15-21	11 (4.6)	8 (3.4)	19 (8.0)		
22-28	1 (0.4)	1 (0.4)	2 (0.8)		
>28	0	1 (0.4)	1 (0.4)		
Number of specialties					
1	134 (56.5)	96 (40.5)	230 (97.0)	2.449	0.118
2	3 (0.8)	6 (2.1)	9 (3.0)		
Outcome					
Discharged	87 (36.4)	74 (31.0)	161 (67.4)	15.122	**0.002***
DAMA	9 (3.8)	16 (6.7)	25 (10.5)		
Referred	7 (2.9)	4 (1.7)	11 (4.6)		
Dead	34 (14.2)	8 (3.3)	42 (17.6)		

*Statistically significant at p-value < 0.05, A&E- Accident & Emergency, Oct - October MOPD-Medical Outpatient Department, PNW- Post Natal Ward, DAMA- Discharged against medical advice. # Fisher Exact value.

Gastroenterology in-patients age peaked in year 2019 with stepwise reduction unlike the length of in-hospital stay which peaked in year 2018. (Table 2). The young and middle age-groups were largely hospitalised for ≤ 7 days while the elderly (≥ 65 years) had elongated hospital stay spanning more than 3 weeks. Majority of those discharged were among the young and middle age groups an attribute also shared by those who died and also discharged themselves against medical advice (DAMA) during admission with variability in their mean ages and duration of in-patient care as depicted in Table 2. Mortality varied across the years under review with the highest death experienced in year 2020 (n=15,25.4%) closely followed by year 2019 (n=13,22.0%) while the least mortality was recorded in year 2017 (n=4, 11.8%). Other pertinent observations from clinical attributes stratification across the age-groups is as depicted in Table 2.

Graphical representation of yearly differences in outcome of hospitalisation (Fig 2) showed more gastroenterology in-patient outward referrals in year 2020 compared to the other years. The medical diagnoses underlying gastroenterology admission across gender categories had statistical relevance (p-<0.001). The prevalent GIT disorders in the male were hepatitis B virus (HBV) induced liver cirrhosis (n=52,21.8%), upper GIT bleeding (n=16,6.7%), alcoholic liver cirrhosis and hepatocellular carcinoma (HCC) with equal frequencies (n=13,5.4%). Gastroenteritis (n=28,11.7%), HBV-induced chronic liver disease (n=25,10.5%) and acute exacerbation of peptic ulcer disease (PUD) (n=20,8.4%) were the most prevalent diagnoses among the female in-patients. (Table 3)

The gastroenterology diagnoses with the highest occurrences were HBV-induced chronic liver disease (n=77,32.2%), gastroenteritis (n=43,18.0%), acute exacerbation of PUD (n=26,10.9%) and HCC (n= 25, 10.5%) while typhoid sepsis (n=3,1.3%), abdominal tuberculosis (Tb) (n=1,0.4%) and liver abscess (n=1,0.4%) were the ones with the least occurrences. (Table 3).

Print ISSN: 0189-9287 Online ISSN: 2992-345X

Table 2 Stratification of specific clinical attributes of gastroenterology in-patients across age-groups from January 1st 2017 to December 31st 2021. Nigeria (n=239)

Attributes	Total n (%)	< 18 years n (%)	18-44 years n (%)	45-64 years n (%)	> 65 years n (%)	Mean age (SD) years	Mean Duration (SD) days	P value
Yearly admission								
2017	34 (14.2)	2 (0.8)	17 (7.1)	10 (4.2)	5 (2.1)	43.3(17.4)	6.7(5.7)	0.411
2018	35 (14.6)	1 (0.4)	14 (5.9)	14 (5.9)	6(2.5)	46.3(16.5)	8.0 (7.5)	
2019	59 (24.7)	0	24(10.0)	23(9.6)	12(5.0)	49.2(16.6)	5.1(3.2)	
2020	59 (24.7)	4 (1.7)	23 (9.6)	26(10.9)	6(2.5)	46.3(10.6)	5.9 (4.9)	
2021	52 (21.8)	1 (0.4)	28(11.7)	14 (5.9)	9(3.8)	44.9(19.2)	6.9 (4.3)	
Yearly mortality								
2017	4 (11.8)	0	3(8.8)	1(2.9)	0	37.5(11.0)	6.0(6.7)	0.587
2018	5 (14.3)	0	0	3(8.6)	2(5.7)	58.2(8.9)	5.2(4.8)	
2019	13 (22.0)	0	5(8.5)	4(6.8)	4(6.8)	50.5(20.1)	4.7(2.7)	
2020	15(25.4)	1(1.7)	7(11.9)	5(8.5)	2(3.4)	46.1(19.5)	5.7(4.9)	
2021	5(9.6)	0	3(5.8)	1(1.9)	1(1.9)	49.6(22.0)	5.0(3.8)	
Total	42(17.6)	1(2.4)	18(7.5)	14(5.9)	9(3.8)	48.5(18.4)	5.3(4.3)	
Duration in hospital (days)								
1-7	172(72.3)	6(2.5)	80(33.6)	59(24.8)	27(11.3)	45.6(17.4)	3.8(1.9)	0.108
8-14	44(18.5)	0	19(8.0)	18(7.6)	7(2.9)	48.3(15.8)	10.3(1.7)	
15-21	19(8.0)	2(0.8)	5(2.1)	10(4.2)	19(8.0)	47.2(18.5)	16.3(1.6)	
22-28	2(0.8)	0	0	0	2(0.8)	70.0(2.8)	25.5(3.5)	
>28	1(0.4)	0	1(0.4)	0	1(0.4)	32(0)	36(0)	
Hepatis/non-Hepatitis related								
Hepatitis B	77(32.2)	1(0.4)	35(14.6)	30(12.6)	11(4.6)	46.1(15.0)	6.9(5.8)	0.143
Hepatitis C	22(9.2)	0	7(2.9)	8(3.3)	7(2.9)	52.1(20.2)	5.5(4.0)	
Hep B &C	3(1.3)	0	0	1(0.4)	2(0.8)	61.7(10.4)	9.0(5.2)	
Others	137(57.3)	7(2.9)	64(26.8)	48(20.1)	18(7.5)	45,2(17.9)	6.1(5.1)	
Outcome								
Discharged	161(67.4)	5(2.1)	73(30.5)	59(24.7)	24(10.0)	45.8(17.0)	6.8(5.4)	0.192
Dead	42(17.6)	1(0.4)	18(7.5)	14(5.9)	9(3.8)	48.5(18.4)	5.3(4.3)	
Referred	11(4.6)	1(0.4)	4(1.7)	5(2.1)	1(0.4)	44.6(16.8)	4.6(2.3)	
DAMA	25(10.5)	1(0.4)	11(4.6)	9(3.8)	4(1.7)	47.0(17.9)	5.5(4.5)	

Hep-Hepatitis, DAMA- Discharged Against Medical Advice

Print ISSN: 0189-9287 Online ISSN: 2992-345X

p=0.734

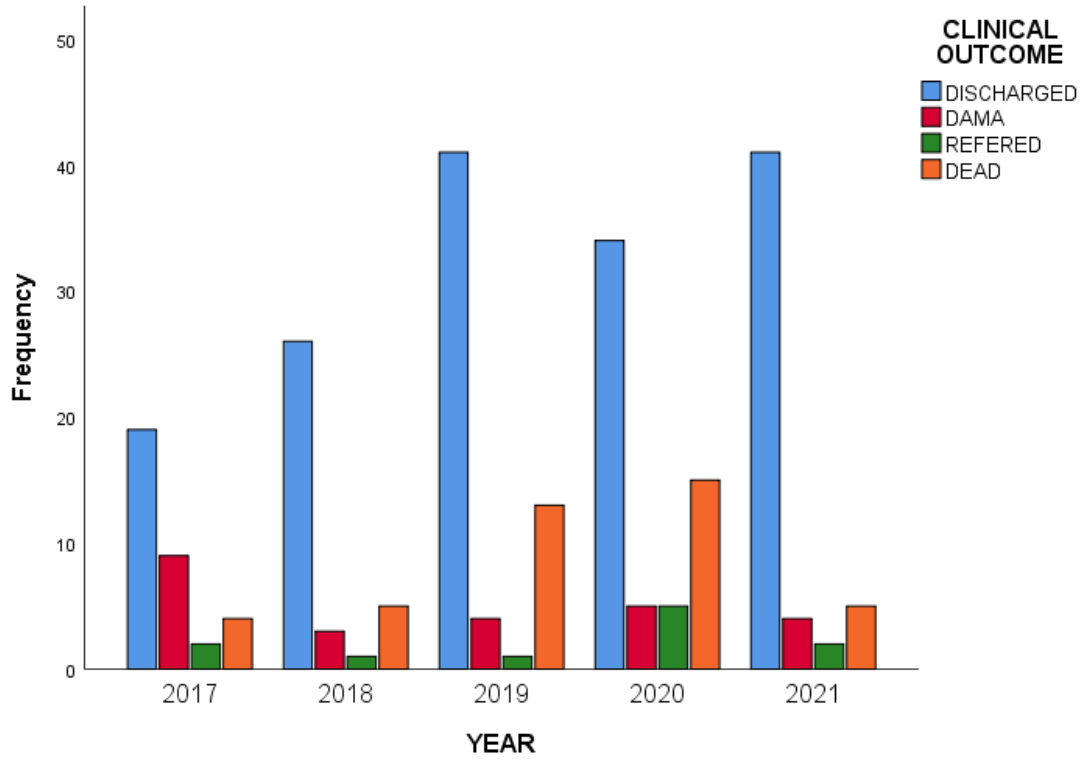

Fig 2 Yearly variations in clinical outcome of Gastroenterology in-patients
DAMA-Discharged against medical advice

Table 3 ICD-10 Stratification of Diagnosis and Mortalities across gender from January 1st 2017 to December 31st, 2021.Nigeria (n=239)

Attributes	Total n (%)	Male n (%)	Female n (%)	Mean age (SD) years	Mean duration (days)	P-value
ICD-10 grouping of diseases of the esophagus, stomach & duodenum						
Gastric Ca	9 (3.8)	4 (1.7)	5 (2.1)	50.3 (14.3)	5.1 (2.1)	< 0.001*
PUD	26 (10.9)	6 (2.5)	20 (8.4)	44.9 (16.7)	5.0 (4.1)	< 0.001*
Upper GIB	21 (8.8)	16 (6.7)	5 (2.1)	46.5 (17.7)	7.9 (4.2)	< 0.001*
Total	56 (23.5)	26 (10.9)	30 (12.6)	47.2 (16.2)	6.0 (3.5)	
Diseases of the Liver						
Alcoholic Liver Dx	16 (6.7)	13 (5.4)	3 (1.3)	58.6 (14.7)	5.9 (3.6)	< 0.001*
CHBV	77 (32.2)	52 (21.8)	25 (10.5)	46.1 (14.9)	6.9 (5.8)	< 0.001*
Acute viral hepatitis	12 (5.0)	11 (4.6)	1 (0.4)	32.4 (9.2)	6.9 (5.5)	< 0.001*
PLCC	25 (10.5)	13 (5.4)	12 (5.0)	53.2 (19.4)	5.9 (4.2)	< 0.001*
Liver abscess	1 (0.4)	1 (0.4)	0 (0.0)	70.0	5.0	< 0.001*
Total	131 (54.8)	90 (37.6)	41 (17.2)	52.1 (14.6)	6.1 (4.8)	
Diseases of the gall bladder, biliary tract and pancreas						
Cholestatic Jaundice	2 (0.8)	0 (0.0)	2 (0.8)	45.5 (2.1)	7.0 (1.4)	< 0.001*
Acute pancreatitis	1 (0.4)	1 (0.4)	0 (0.0)	49.0	6.0	< 0.001*
Total	3 (1.2)	1 (0.4)	2 (0.8)	47 (1.1)		
Noninfective enteritis/colitis						
Gastroenteritis	43 (18.0)	15 (6.3)	28 (11.7)	43.2 (20.0)	5.4 (3.9)	< 0.001*

Print ISSN: 0189-9287 Online ISSN: 2992-345X

Total	43 (18.0)	15 (6.3)	28 (11.7)	43.2 (20.0)	5.4 (3.9)	< 0.001*
Infectious &parasitic diseases						
Typhoid enteritis	3 (1.3)	3 (1.3)	0 (0.0)	29.6 (10.7)	5.7 (5.5)	< 0.001*
Abdominal Tb	1 (0.4)	1 (0.4)	0 (0.0)	49.0	3.0	< 0.001*
Total	4 (1.7)	4 (1.7)	0 (0.0)	39.3 (5.3)	4.4 (2.8)	< 0.001*
Other GIT diseases						
Lower GIB	2 (0.8)	1 (0.4)	1 (0.4)	56.0 (1.4)	3.0 (1.4)	< 0.001*
Mortalities						
Gastroenteritis	5 (11.9)	3 (7.1)	2 (4.8)	39.6 (32.9)	6.4 (6.7)	0.761
Upper GIB	1 (2.4)	1(2.4)	0 (0.0)	86.0	8.00	
Gastric Ca	1 (2.4)	1 (2.4)	0 (0.0)	54.0	7.00	
PLCC	6 (14.3)	4 (9.5)	2 (4.8)	48.5 (16.2)	5.5 (5.2)	
CHBV	21 (50.0)	18 (42.9)	3 (7.1)	46.6 (16.2)	4.9 (3.9)	
Alcoholic LDx	6 (14.3)	5 (11.9)	1 (2.4)	53.2 (9.2)	5.5 (5.1)	
Liver abscess	1 (2.4)	1 (2.4)	0 (0.0)	70.0	5.0	
Acute hepatitis	1 (2.4)	1 (2.4)	0 (0.0)	39.0	5.0	
Total	**42 (100.0)**	**34 (81.0)**	**8 (19.0)**	**48.5 (18.4)**	**5.3 (4.3)**	

* Statistically significant at P <0.05, PUD-Peptic Ulcer Disease, GIB- Gastrointestinal bleeding, PLCC- Primary Liver cell Cancer, NAFLD- Non-alcoholic fatty liver disease, TB-Tuberculosis, GIT-Gastrointestinal, CHBV-Chronic Hepatitis B virus, Ca-Cancer, LDx- Liver disease, IBD-Inflammatory bowel disease

Liver cirrhosis cumulatively accounted for 14.2% (n=34) of GIT disorders necessitating in-patient care with CHBV infection and alcoholic liver disease contributing 10.04% (n=24) and 4.18% (n=10) respectively. Upper GI bleeding majorly resulted from complication of liver cirrhosis (n=10,4.1%), NSAID induced gastritis (n=5,2.1%) and oesophageal variceal bleed (n=3,1.3%) while the cause of the bleed was unknown in 3 (1.3%).
The GIT disorders with the highest and lowest mean ages were liver abscess (70 years) and typhoid sepsis (29.6 ± 10.7 years). Length of hospitalisation was significantly higher in patients with upper GIT bleeding and lowest in the patient with abdominal Tb (7.9± 4.2 days vs 3.0 days). Gender did not significantly influence mortality among gastroenterology in-patients (p-0.761).

The crude mortality rate was 17.6% with a higher rate in male compared to the female (14.2% vs 3.3%). Case fatality rate was highest in patients with HBV-induced liver cirrhosis(n=21,50%), HCC (n=6,14.3%), alcoholic liver cirrhosis (n=6,14.3%) and gastroenteritis (n=5,11.9%). Table 3 No deaths were recorded among patients with acute exacerbation of PUD, abdominal Tb, typhoid sepsis and other GIT disorders. Among the male patients with GIT diseases, mortality was predominant in patients with HBV-induced liver cirrhosis (n=18,42.9%), alcoholic liver cirrhosis (n=5,11.9%), HCC (n=4,9.5%) and gastroenteritis (n=3,7.1%). Mortalities among the female gastroenterology in-patients were mostly observed in those with HBV-induced liver cirrhosis (n=3,7.1%), HCC (n=2,4.8%) and gastroenteritis (n=2,4.8%). The highest mean age among the patients with in-hospital mortalities was in the only patient with liver abscess (70 years).
Length of hospital stay among the patients with mortality was highest in those with upper GIT bleeding (8.0 days) and lowest in HBV-induced liver cirrhosis (4.9 ±3.8 days). (Table 3) Mortality stratification across the clinical diagnosis underlying gastroenterology admission on yearly basis had statistical significance (p-0.017) as presented in Table 4.

Table 4 Yearly distribution of mortalities across gastroenterology diagnosis from January 1st 2017 to December 31st 2021. Nigeria (n=42)

Diagnosis	**2017 n (%)**	**2018 n (%)**	**2019 n (%)**	**2020 n (%)**	**2021 n (%)**	**Total n (%)**	**P value**
Acute PUD	0	0	0	0	0	0	**0.017***
Gastroenteritis	0	0	0	4 (9.5)	1 (2.4)	5 (11.9)	
Upper GIB	0	0	0	0	1 (2.4)	1 (2.4)	
GIT malignancy	0	0	1 (2.4)	0	0	1 (2.4)	
PLCC	1 (2.4)	3 (7.1)	2 (4.8)	0	0	6 (14.3)	

Print ISSN: 0189-9287 Online ISSN: 2992-345X

Diagnosis	2017 n (%)	2018 n (%)	2019 n (%)	2020 n (%)	2021 n (%)	Total n (%)	P value
CHBV-induced liver cirrhosis	3 (7.1)	1 (2.4)	8 (19.0)	6 (14.3)	3(7.1)	21 (50.0)	
Alcoholic Liver Cirrhosis	0	1(2.4)	0	5 (11.9)	0	6 (14.3)	
Acute Hepatitis	0	0	1 (2.4)	0	0	1 (2.4)	
Typhoid Sepsis	0	0	0	0	0	0	
Abdominal TB	0	0	0	0	0	0	
Liver abscess	0	0	1 (2.4)	0	0	0	
Other GIT diseases	0	0	0	0	0	0	
Total	4 (9.5)	5 (11.9)	13 (31.0)	15 (35.7)	5 (11.9)	42 (100)	

* Statistically significant at P <0.05, PUD-Peptic Ulcer Disease, GIB- Gastrointestinal bleeding, PLCC-Primary Liver cell Cancer, CHBV- Chronic Hepatitis B virus, TB-Tuberculosis, GIT-Gastrointestinal

Logistic regression analysis run to predict the effect of specific clinico-demographic attributes on outcome (dead vs alive) showed that only female gender (AHR-0.21,95% CI 0.07-0.63; P=0.006) and stratification into hepatitis/non- hepatitis related GIT disorder (AHR1.4,95%CI 1.05-1.86; P=0.019) were predictive of clinical outcome as shown in Table 5.
A linear regression analysis run to predict effect of year of admission, clinical diagnosis, stratification into hepatitis/non-hepatitis related GIT disorders and number of specialties on duration of hospitalisation was not statistically predictive F (5,205) =1.023, p >0.055 R^2= 0.000. On Kaplan Meier's survival plots, gender (p-0.001) and clinical diagnosis (p-0.025) contributed significantly to survival among gastroenterology in-patients Fig 3a-e.

Table 5 Logistic Regression to predict effect of specific clinico-demographic attributes on Clinical Outcome (Dead or Alive)

Attributes	B	SE	WALD	Sig	Exp B	95%CI	
						Lower bound	Upper bound
Intercept	-31.382	8574.28	0.000	.997			
Age	0.025	0.031	0.642	0.423	1.025	0.965	1.089
Duration in hospital	-0.072	0.050	2.061	0.151	0.930	0.843	1.027
Gender female	-1.555	0.564	7.591	**0.006***	0.211	0.070	0.638
Age-group	1.315	2.126	0.383	0.536	3.726	0.058	24.038
Admission Route	-0.026	7528.053	0.000	0.998	0.974	0.000	
Marital status (Married)	-2.130	1.706	1.558	0.212	0.119	0.004	3.3370
Hepatitis/non-hepatitis related	0.339	0.145	5.457	**0.019***	1.403	1.056	1.864
Diagnosis	0.919	4332.7	0.000	1.000	1.657	1.165	1.978
Year of Admission	-0.905	0.142	0.408	0.523	0.913	0.692	1.206
Constant	-5.386	5.053	1.136	0.286	0.005		

Note The dependent variable in this analysis is clinical outcome coded 0-Dead 1-Alive
* Statistically significant at p<0.05, Hepatitis/non-hepatitis related - Hepatitis/non-hepatitis related clinical diagnosis, CI-Confidence Interval, Sig- Significance, Exp B- Exponential B, SE- Standard Error.

Print ISSN: 0189-9287 Online ISSN: 2992-345X

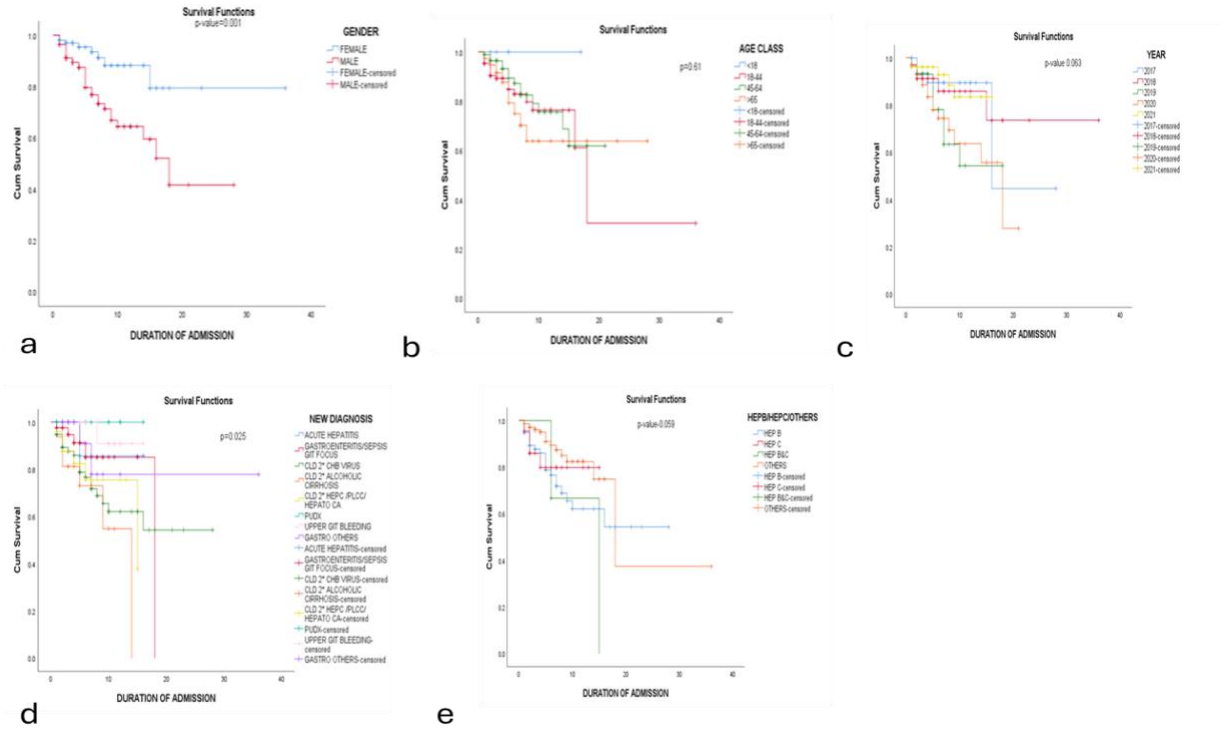

Fig 3a-e Kaplan Meier's plots of effect of clinical and demographic characteristics on survival.

Print ISSN: 0189-9287 Online ISSN: 2992-345X

Discussion

The spectrum of clinical presentations as well as pertinent outcome and survival characteristics of gastroenterology in-patients domiciled in a tropical referral center as reflected in this study is of paramount importance to understand the prevalent infective/other GIT disorders, its distribution among age-group and gender strata' which would in turn aid targeted health planning and interventions. Of the 2,340 medical in-patients hospitalized during the 5-years under spotlight, only 239 (10.2%) had diseases affecting the digestive system. This is slightly lower than 11.7% reported in the Southern part of the country where both the patient's number and study period was lower.[12]

In the Northern part of the country however, a higher population of patients (n=1266) presented with diverse GIT disorders spanning similar time frame which may be attributed to sparsely distributed albeit densely populated tertiary health facilities that are often many miles apart in addition to the distinct population dynamics of the studied area.[13] A lower prevalence of gastroenterology admissions was reported in Ethiopia probably due to the limited study duration, study type and incipient population characteristics.[9]

Gastroenterology admissions were more pronounced among the male an observation which has been widely corroborated within the country and outside the country with some few exceptions.[2,9,12-13,15] Harmful social/behavioral practices such as uninhibited alcohol consumption, unhindered ingestion of harmful drugs and other hepatocytic toxins as well as smoking are well documented precursors of disorders of the digestive tract which are mostly found in men and may be the reason for the high occurrence of GIT disorders among the male as observed in this study.[2,3] A higher DALY of approximately 55 million was reported in men with GIT disorders according to a recently publicized global survey given further credence to the preponderance of GIT diseases among the men. The increased burden of GIT disorders which occurred for most parts of year 2019 &2020 as reflected in this study was corroborated by a prior survey in the Southern part of Nigeria .[12]

The mean age of the gastroenterology in-patients (46.3±17.3years) though lower than 50.9 ± 15.9 years recorded in the riverine Southern part of the country was higher than the 39.4 ±18.4 years documented in the Northern part of the country. [12,13] These values though different are not too wide apart further corroborating the population dynamics of Nigeria with regards to the likelihood of GIT diseases manifesting in these age range. The increased affectation of the young (18-44 years) remotely followed by the middle age-group (45-64 years) as demonstrated in this study is in agreement with previous findings in Nigeria although with variation in their percentages. [12,13,14,15] This is at variance with the global predilection of disorders of the GIT for age-group 50-59 according to a newer survey involving more than 200 countries.[2]

The high burden of digestive diseases borne by the young and middle age may be due to constellation of risky social & culinary practices and the population dynamics of the studied area as a huge proportion of the populace belonged to the working class due to the situation of the health facility within an urban capital city. The male gender was predominant in these age-groups further corroborating the synergistic influence of testosterone which is higher in these age-groups on the occurrence of HBV-mediated GIT diseases.[17]

A huge proportion of the in-patients presented acutely and were admitted through the accident and emergency unit of the hospital an observation which was corroborated in the Northern part of the country although in lower proportion (95% vs 75%). [13] This may be due to the relentlessly evolving nature of the illnesses, lack of financial will for early presentation, inadequate/incorrect information about the ailments, bad health seeking habits, sub-optimal referral practices and long waiting period to assess the few available gastroenterologist.

Length of gastroenterology in-hospital confinement was mainly ≤ 21 days with a large proportion spending up to 7 days with bias towards the male gender which compared favorably with an earlier documentation in another tertiary health facility in the country. [17] The gender tilt observed with regards to lengthened in-hospitalization in this study may be linked to the increased burden of relentless non-remitting GIT disorders among the men compared to the women. Diseases with liver affectation was the most frequently encountered disorder of the GIT in this study with a huge proportion attributable to CHB virus infection, alcoholic cirrhosis and HCC with more affinity for the male gender.

Print ISSN: 0189-9287 Online ISSN: 2992-345X

Diseases of the digestive tract with liver affectation from varied aetiologies were present in 54.8% of the gastroenterology in-patients which is higher than 7.9% and 50.4% reported by Nwokediuko et al [19] and Egboh et al [12] in Southern Nigeria and 31.3% reported by Yakubu et al[13] in Northern Nigeria. A lower prevalence of 4.9% was reported for liver diseases among those admitted in a 4-year retrospective survey in Sudan.[20] In Gambia, a lower prevalence of chronic liver disease ranging between 2.3% and 17.3% for alcohol liver cirrhosis and CHBV liver disease respectively was reported.[21]

The global burden of liver disease which is presently 51.9% although lower than the value obtained in this study is still reflective of the global drift of liver diseases with a rising titer in Nigeria a Sub-Saharan African Country. [2] This brings to bear the overwhelming burden of harmful practices and environmental influences that increases exposure to hepatic toxins such as heavy alcohol consumption, smoking, obesity, aflatoxins, use of local herbal remedies, unsafe cultural/transfusion practices and underutilization of vaccination against HBV all of which can lead to hepatocyte damage. Sub-Saharan Africa is still a leading contributor to the global burden of CHBV infection and to a lesser extent HCV and alcohol mediated liver cirrhosis.[2,3] Gastroenteritis, peptic ulcer disease and upper GIT bleeding in descending order of occurrence also contributed to gastroenterology admission in this study in divergent proportions. This is at variance to the observation of Egboh et al [12] where upper GIT bleeding and PUD occupied the 2nd and 3rd position among the causes of gastroenterology admission. In the United States of America PUD remains the leading cause of gastroenterology admission in contrast to what is obtainable in Africa. [1]

In the Northern part the country chronic liver disease, dyspepsia and diarrhea disease were the three-leading cause of GIT admission. [13] The reduced frequency of gastroenteritis in this study when compared to the finding by Yakubu et al [13] may be due to better sanitation practices, increased availability of portable drinking water and reduced/non-existence of banditry/ terrorism in the south compared with the North. Abdominal TB was also prevalent in the Northern part of the country (n=67) compared to the Southern part where our tertiary facility is located where only 1 case was reported. This may be linked to the cultural/culinary practises in the former that promulgates bovine/ pulmonary TB. [13]

In totality, the summative crude mortality rate in this study was 17.6% with a male preponderance. The observed mortality rate for digestive tract diseases in Nigeria ranges between 8.9 % to 18.6% in the South and Northern part respectively with a few in between values. [11,12,13] Overall fatalities attributed to digestive diseases with liver affectation (acute hepatitis, alcoholic & CHB virus induced liver cirrhosis, HCC and liver abscess) in this study was 83.4% which is an all-time high but compares favorably with both local and continental documentation of its significant contribution to global deaths. [1,2] Of the approximately 3 million mortalities linked to GIT disorders globally in the 2019 survey, death from chronic liver diseases accounted for a major proportion with significant contribution from alcoholic cirrhosis, hepatitis C and CHBV infection.[1,21,22] Predominance of deaths among men as reflected in this study gives further credence to the widely published observation of the male gender been the largest repository of harmful habits and lifestyle that favors initiation and sustenance of pathophysiologic process underlying GIT diseases. [1,2,11-13,18] Survival of in-patients with GIT diseases were significantly influenced by gender and underlying diagnosis a finding which could not be correlated because of paucity of survival studies in patients admitted for digestive tract diseases both locally and globally hence more research should be focused on this important but neglected aspect.

Strength and limitation of study

The study was limited because it was a survey carried out in retrospect with increased likelihood for misplacement of patients' information which may hamper the inclusion of all the patients that were admitted during the period under study. The study focused on gastroenterology medical admissions with none-inclusion of other wards due to insufficient/missing data from the non-medical wards, which may culminate in under-representation of cumulative GIT confinements. Furthermore, being a hospital domesticated survey may hamper large scale application of the results derived from it. However, this study has brought to the fore the effect of specific demographic and distinctive attributes of certain GIT disorders on the clinical outcome as well as survival of in-hospitalized patients with disorders of the GIT. This

Print ISSN: 0189-9287 Online ISSN: 2992-345X

will further serve as a reference point for further research in this area.

Implications of the findings of this study

This study has demonstrated that 10 out of every 100 adult patients admitted on the medical ward is likely to have a GIT disorder of which 3 might be due to CHBV induced liver cirrhosis with male predominance. The young and middle age were mainly affected with high case fatality rate demonstrating that more concerted efforts through advocacy and improved vaccination against Hepatitis B virus should be prioritized at all strata of governance as well as individually.

Conclusion

On the backdrop of the enormous burden of digestive tract diseases with liver involvement mainly from CHBV infection with male preponderance among the young as depicted in this study, concerted efforts both individually and collectively at various levels and fora must be encouraged and practiced wholeheartedly to effectively reduce in the short term and eventually bring to a halt the menace the rising figures of morbidities and deaths associated with disorders of the GIT currently portrays.

Declarations

Authors Contribution: TAB initiated, designed and coordinated the research, carried out data analysis and drafted the manuscript. AGA & PKU partook in study design, data collection and review of manuscript. OAO, IMA &AA took part in study design, data interpretation and review of manuscript. AAS, FI partook in study design, data collection and manuscript review. All the authors' approved the final draft.

Conflict of Interest: No conflict of interest

Funding: No funding was received for this work

List of Abbreviation GIT-Gastrointestinal tract, DALY- Disability-adjusted life-years, A&E- Accident & Emergency, MOPD-Medical Outpatient Department, PNW- Post Natal Ward, DAMA- Discharged against medical advice, PUD-Peptic ulcer disease, TB-Tuberculosis, CHB-Chronic Hepatitis B, HCV-Hepatitis C Virus infection, NAFLD-Nonalcoholic fatty liver disease. UniOsun- Osun State University.

References

1. Peery AF, Crockett SD, Murphy CC, Jensen ET, Kim HP, Egberg MD, et al. Burden and cost of gastrointestinal, liver, and pancreatic diseases in the United States: update 2021. Gastroenterology. 2022; 162:621–44. doi: 10.1053/j.gastro.2021.10.017
2. Wang R, Li Z, Liu S and Zhang D Global, regional, and national burden of 10 digestive diseases in 204 countries and territories from 1990 to 2019. Front. Public Health 2023; 11:1061453. doi: 10.3389/fpubh.2023.1061453.
3. Sepanlou SG, Malekzadeh F, Delavari F, Naghavi M, Forouzanfar MH, Moradi- Lakeh M, et al. Burden of gastrointestinal and liver diseases in Middle East and North Africa: results of global burden of diseases study from 1990 to 2010. Middle East J Dig Dis. 2015; 7:201–15.
4. Bloom S, Webster G, Marks D. ed. Emergencies. In oxford handbook of gastroenterology and hepatology. 2nd edition. Oxford University Press. 2012;(5):563-597.
5. Mathews SC, Izmailyan S, Brito FA, Yamal JM, Mikhail O, Revere FL. Prevalence and financial burden of digestive diseases in a commercially insured population. Clin Gastroenterol Hepatol. 2021; doi: 10.1016/j.cgh.2021.06.047
6. Fletcher, S.M., Stark, D., Ellis, J. Prevalence of gastrointestinal pathogens in Sub-Saharan Africa: systematic review and meta-analysis. Journal of Public Health 2011; 2, e30.
7. Sperber, A. D., Bangdiwala, S. I., Drossman, D. A., Ghoshal, U. C., Simren, M., Tack, J., et al., J. Worldwide prevalence and burden of functional gastrointestinal disorders, results of Rome Foundation Global Study. Gastroenterology. 2021;160(1):99-114.
8. Sepanlou SG, Safiri S, Bisignano C, Ikuta KS, Merat S, Saberifi R M, et al. The global, regional, and national burden of cirrhosis by cause in 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study2017. The Lancet gastroenterology & hepatology. 2020 ;5(3):245-66.
9. Hailu A, Gidey K, Ebrahim M, Berhane Y, Gebrehawaria T, Hailemariam T, Negash A, et al. Patterns of Medical Admissions and Predictors of Mortality in Ayder Comprehensive Specialized Hospital, Northern Ethiopia: A Prospective Observational Study. Int J Gen Med.2023 ;16: 243–257.
10. Etyang AO, Scott JAG. Medical causes of admissions to hospital among adults in Africa: a systematic review. Glob Health Action.2013 ;6: 19090.doi:10.3402/GHA.V6I0.19090
11. Okoroiwu HU, Uchendu KI, Essien RA. Causes of morbidity and mortality among patients admitted in

Print ISSN: 0189-9287 Online ISSN: 2992-345X

a tertiary hospital in southern Nigeria: A 6-year evaluation. PLoS ONE.2020; 15(8): e0237313.
12. Egboh SC, Bozimo GE, Madubuike CO. Pattern and Outcome of Gastroenterology Admissions in Federal Medical Centre, Yenagoa. Greener Journal of Medical Sciences.2023; 13(1):46-52.
13. Yakubu A, Maiyaki S.A, Musa AA, Sakajiki A, Umar H. Spectrum and Prevalence of GIT Admissions at a Tertiary Hospital in a Resource Poor Setting, Northwestern Nigeria: A Five-Year Review. World Journal of Research and Review.2020 ;11 (4):43-51.
14. WHO. International statistical classification of diseases and health related problems. Geneva. 2004 http://apps.who.int/classifications/apps/icd/icd10 onli ne/[Last accessed on 13th February 2025
15. Oghenetega O.B, Kuti T.J, Owolabi F.M, Omayone T.P. Five-year Prevalence of Gastrointestinal Diseases and Disorders in Akure South, Nigeria. Afr. J. Biomed. Res. 2021; 24 245- 249
16. Adeleye O, Olatunji A, Afe T, Odusan O, Olaitan A, Soyewo G. A study of disease pattern in a tertiary level Gastroenterology and Hepatology Out-Patient Unit. Annals of Health Research. 2017;3(2):92-97.
17. Yu MW, Chang HC, Chang SC. Role of reproductive factors in hepatocellular carcinoma: impact on hepatitis B- and C-related risk. Hepatology 2003; 38(6):1393-1400.
18. Adekunle OA, Ebenezer AA, Akande OA, Samuel AD, Joseph OF, Michael A, et al. Pattern and Outcome of Medical Admissions in Ekiti State University Teaching Hospital, Ado-Ekiti- A 5 Year Review; American Journal of Medicine and Medical Sciences 2015, 5(2): 92-98.
19. Nwokediuko SC, Osuala PC, Uduma UV, Alaneme AK, Onwuka CC, Mesigo C. Pattern of liver disease admissions in a Nigerian tertiary hospital. Nigerian journal of clinical practice. 2013;16(3):339-42.
20. Omar S, Osman O, Gasim I, Adam I. Pattern and Trends in Adult Hospitalization/Admission and Mortality Among Medical Ward Inpatients at Gadarif Hospital in Eastern Sudan: A Four-Year Retrospective Study. Int. J. Gen. Med. 2022:15 5879–5889
21. Surial B, Wyser D, Béguelin C, Ramírez-Mena A, Rauch A, Wandeler G. Prevalence of Liver Cirrhosis in Individuals with Hepatitis B Virus Infection in Sub-Saharan Africa: Systematic Review and Meta-analysis. Liver International. 2020.
22. Ly KN, Hughes EM, Jiles RB, Holmberg SD. Rising mortality associated with hepatitis C virus in the United States, 2003–2013. Clin Infect Dis. 2016; 62:1287– 8. doi: 10.1093/cid/ciw111

Print ISSN: 0189-9287 Online ISSN: 2992-345X