



The Cut-off Age for Gastrosocopy in the Management of Dyspepsia Patients in a Tertiary Hospital in Central South Africa

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Abstract

Background: Dyspepsia is a widespread medical condition; it confers a poor quality of life on the patient, although survival is not affected. The American College of Gastroenterology/Canadian Association of Gastroenterology (ACG/CAG) is among the most followed guidelines worldwide for managing dyspepsia patients, including Central South Africa. However, the ACG/ACG uses the cut-off age of 60 for gastroscopy, which may be inappropriate for Central South Africa due to the epidemiological differences.

Objective: To demonstrate that the cut-off age of 60 used for gastroscopy in managing dyspepsia patients may be inappropriate for Central South Africa. The argument will be supported by a high prevalence of significant pathology on gastroscopy among young dyspepsia patients with no alarm signs.

Method: A retrospective record review of dyspepsia patients, without alarm signs, aged 18 to 59 years, who had gastroscopy in one of the academic hospitals in Central South Africa between 01, 2018 and 08, 2019.

Results: The study included 167 (3.6%) patients out of the 4,588, with 40.7% (68/167) with significant pathology. The median age of significant pathology was 43 years. The study also found that 20.3% of patients (34/167) had a normal gastroscopy and 38.9% (65/167) of patients with benign pathology.

Conclusion: The study concluded that many young dyspepsia patients without alarming features have significant pathology on gastroscopy 40.7% (68/167). The cut-off age of 60 may be inappropriate for Central South Africa. We suggest further local studies and a review of the cut-off age.

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Introduction

Dyspepsia is a common symptom with extensive differential, affecting around twenty per cent of the population worldwide with a high cost to the economy; although it does not affect survival, patients have an inferior quality of life [1]. There are many guidelines suggested for the management of dyspepsia patients. The most influential are from the Western world, epidemiologically considered low-risk countries for significant upper gastrointestinal pathology. They advocate delayed gastroscopy, especially in young dyspeptic patients, and set the cut-off age for endoscopy at 60 and above. Currently, the Cut-off age of 60 for gastroscopy has been used to manage dyspepsia patients in Central South Africa as suggested by The America College of Gastroenterology/Canadian Association of Gastroenterology in managing the management of dyspepsia patients.

1. The American College of Gastroenterology/Canadian Association of Gastroenterology in the management of dyspepsia patients suggests the age of 60 or 65 years as the threshold age at which endoscopy should be offered to all new dyspeptic patients, but the age of 45 or 50 years for United States patients of Asian, Hispanic, or Afro-Caribbean extraction or in population with a high incidence of gastric cancer in young individuals [2,3].

2. The United European Gastroenterology and European Society for Neurogastroenterology and Motility consensus for managing dyspepsia patients recommended endoscopy in adults older than 45 with persistent dyspepsia. However, recently after the 2019 Delphi consensus, the cut-off age for gastroscopy has been changed to 60 [4].

3. The National Institute of Care and Excellence guideline in managing dyspepsia patients

2014 does not set a straightforward cut-off age but suggests prompt endoscopy for patients with alarming features; otherwise advocates for a delayed endoscopy [5].

These recommendations highlight that the management of the population with dyspepsia is based on the symptoms, age, ethnic background, family history, nationality, and regional incidence of gastric cancer. The guideline formulated in one part of the world may be inappropriate in others, especially considering epidemiologic differences.

The ACG/AGA guidelines may not be appropriate in central South Africa for managing dyspepsia patients for the following reasons:

(1) The high prevalence of HIV-positive patients among South Africans is 18.9% compared to the United States of America, with a low prevalence of only 0.3% according to CDC 2017 report. HIV is linked to a high rate of malignancy in general and pathologies like esophageal candida.

(2) *Helicobacter pylori* are linked to a high prevalence of upper GIT pathologies. The prevalence of *H. pylori* among the South African population is around 50% to 80% [6], while the USA population has a prevalence of 20%, essential among non-white populations [2].

(3) Poor socioeconomic circumstances are associated with a high prevalence of gastric adenocarcinoma [7,8]; South Africa, having a sizable portion of the population living in poor conditions, is at high risk for gastric cancer instead to the USA.

(4) The use of alcohol and tobacco products is rising in South Africa while declining in the United States of America; this also implies that South African populations are at high risk for upper gastrointestinal pathology.

(5) Human papilloma virus is also higher in South Africa compared to America [9]. This one is linked to pharyngeal carcinoma, although its role in oesophageal malignancy is still not proven.

(6) Finally, patients should be offered early gastroscopy; otherwise, many patients will be lost for follow-up due to a flawed system.

Study question

Considering all these local prevailing conditions in The Central part of South Africa, should we still adhere to the Cut-off of 60 suggested by the ACG/CAG guidelines for managing dyspepsia patients?

Study aim

To demonstrate a higher prevalence of clinically significant pathology on gastroscopy in dyspepsia patients without alarm features aged below 60 will eventually advocate for more studies to formulate an appropriate local guideline, most probably with lower cut-off age.

Material and Methods

Study setting

Universitas Academic Hospital (UAH) is the leading teaching Hospital of the University of the Free State Faculty of Health Sciences. The hospital offers a full range of tertiary and highly specialized services. It is a referral Hospital for several Provinces, the Free State, Northern Cape, and Lesotho facilities. The High-tech endoscopy unit

performed an average of 50 endoscopic procedures weekly; these include both diagnostic and procedural.

Pelonomi Tertiary Hospital (PTH), the second teaching hospital of the University of the Free State Faculty of health sciences, covering the same referral drainage area, offered primary, secondary, and tertiary levels of care but also referred patients to Universitas academic hospital for more specialized care. PTH also has an endoscopic unit that offers elective, non-interventional procedures.

Materials and study design

Retrospective record review of patients who had gastroscopy for dyspepsia at either PTH or UAH during the study period and met inclusion criteria. Medical electronic records and, when necessary hard copies were used. Patients were identified from the registers databases at the two endoscopies units, and the files were retrieved from Meditech (electronic filing system) or the appropriate filing office when hardcopies were needed.

Inclusion criteria

Inclusion criteria included patients aged between 18 to 59 years, with dyspepsia according to Rome IV criteria, without alarm features, who had an upper endoscopy between 01, 2018 to 08, 2019 at Pelonomi Tertiary Hospital or Universitas Academic Hospital.

Exclusion criteria

Dyspepsia patients aged below 18 or above 60 years, with alarm symptoms, and with no recorded age.

Data collection, capturing and analysis

A structured data collection tool (appendices) extracted data from patients' hospital records. The following data were collected, demography, age, sex, race, HIV status, gastroscopic finding, Histology report, and medications used before the gastroscopy.

In our practice, the decision to refer a dyspepsia patient for a gastroduodenoscopy is guided by ACG/AGA guidelines, and the treating physician may use his discretion. Dyspepsia was defined as per the Rome IV consensus. Patients were classified into three categories: Normal gastroscopic findings (N). Patients with pathology that could have been managed without a gastroscopy and with good response to Proton Pump Inhibitor (PPI) treatment alone or with eradication therapy and endoscopy will not necessarily change their management were classified as (P1). Lastly, (P2) patients have pathology that will show some response to PPI but still need additional investigation, e.g., manometry, 24-h esophageal PH monitoring or contrast study, or pathology where PPI will be inappropriate treatment, the outcome in the management of these patients will be compromised without gastroscopy. Therefore, these patients (P2) have significant gastroscopic findings.

Obayo et al. [10] defines clinically significant findings as any lesion that could be responsible for the presenting dyspepsia symptoms or change in the patient's management. However, gastritis was excluded; hiatus hernia was excluded because of the significant uncertainty.

Abdel Jawad et al. [11] defines significant endoscopic finding as erosive oesophagitis, malignancy, stricture, and finding requiring specific treatment.

Ng et al. [12], a multi-centre study in Asia-pacific, found a quarter of asymptomatic patients with intestinal metaplasia.

The Department of Biostatistics of the UFS analyzed the data

through frequencies and percentages for categorical data and percentiles for numerical data.

Ethical consideration

The Health Sciences Research Ethics Committee of the University of the Free State (UFS-HSD2019/2046/2605) and the provincial health department of the Free State approved the study. Files numbers were used to retrieve patients' medical records from the medical filling system. Patients identified, such as names and dates of birth, were not used or entered into the data collecting tools to ensure confidentiality.

Results

General findings

During the study period, referencing Table 1, 4,588 Patients had an oesophagogastrosocopy done in the two hospitals combined, Pelonomi Academic Hospital and Universitas academic hospital. Of the 4,588 patients, 61.3% (2817/4588) had their endoscopy at Universitas Academic Hospital, and the rest, 38.6% (1771/4588) at Pelonomi tertiary hospital.

Of those 4,588, only 3.6% (167/4588) patients presented with dyspepsia without alarm features, aged 18 to 59 years, and were included in the study.

The study shows that of the 167 patients included, 64.3% (107/167) had their endoscopy performed at Pelonomi Tertiary Hospital and 35.3% (59/167) at Universitas Academic Hospital.

Table 2 shows the basic demographics of the population's study. Of the patients included in the study, 18.5% (31/167) were black; white 12.5% (21/167), colored 5% (5/167); and 65.8% (110 /167) had no record of race.

More females were part of the study, with 70.6% (118/167) females and 29.3% (49/167) males. Nearly half of the patients (47.9%, 80/167) had HIV status either unknown or not recorded. Of those with known HIV status, 20.7% (18/87) were HIV positive.

The median age of the study population was 43 years, with the youngest patient being 19 and the oldest 59 years. Most patients at the time of gastroscopy were on a treatment that was not related to an upper gastrointestinal condition or not on any form of treatment 77.8% (130/167); 3.5% (6/167) were on chronic NSAIDs, 30/167 17.9% (30/167) were already taking PPI.

Table 3 shows on endoscopy that gastritis was the most common finding with 28.7% (48/167), followed by normal gastroscopy 20.3% (18/167), reflux oesophagitis 14.7% (25/167), and hiatus hernia 10.7% (18/167). From Table 4, 17 biopsies were performed out of 167 gastroscopies included in the study. The biopsy showed that 1.1% (2/167) of patients had adenocarcinoma microscopically, Microscopic benign peptic ulcer disease was 1.7% (3/167), Chronic microscopic gastritis was found in 4.1% (7/167).

Table 1: Total number of gastroscopies.

The total number of gastroscopies performed	N=4588	%
Universitas academic hospital	2817	61,3%
Pelonomi tertiary hospital	1711	38.60%
Gastroscopies were included in the study.	N=167	%
Universitas academic hospital	59	35.3
Pelonomi tertiary hospital	107	64.3

Table 2: Demography of dyspepsia patients.

Data	N (167)	%
Age		
Median age 43		
Age groups		
Up to 19	3	1.7
20-29	29	17.3
30-39	32	19.1
40-49	57	43.1
50-59	46	27.5
Sex		
Female	118	70.6
Male	49	29.3
HIV Status		
Negative	69	41.1
Positive	18	10.7
Unknown	80	47.9
Race		
Black	31	18.5
White	21	12.5
Colored	5	2.9
Not recorded	110	65.8
Medications		
PPI	30	17.9
NSAIDs	60	3.5
Other or no medications	130	77.8
Hospital		
Pelonomi	107	35.5
Universitas	59	64.5

Table 3: Gastroscopic findings.

Finding	N=167	%
Gastritis	48	28.7
Normal gastroscopy	34	20.3
Reflux esophagitis	25	14.7
Hiatus hernia	18	10.7
Gastroduodenitis	9	5.3
Prepyloric ulcer	6	3.5
Oesophageal candida	5	2.9
Duodenitis	5	2.9
Hemorrhagic gastritis	4	2.3
Gastric ulcer (no biopsy taken)	3	1.7
Duodenal ulcer	3	1.7
Gastric polyp	3	1.7
Gastric adenocarcinoma	2	1.1
Diaphragmatic hernia	1	0.5
Oesophageal diverticulum	1	0.5
Oesophageal leiomyoma	1	0.5

Classification

Table 5 shows that patients were divided into three classes

Table 4: Histology report.

Microscopic result	N=167	%
Adenocarcinoma	2	(1.19)
Benign peptic ulcer disease	3	(1.79)
Glandular polyp	1	(0.59)
Multiple myomas	1	(0.59)
Normal gastric mucosa	2	(1.19)
Chronic gastritis	7	(4.19)
Non-conclusive	1	(0.59)

Table 5: Patients classification based on gastroscopic and histologic findings.

CLASS	N=167	%
P2	68	40.7
Reflux oesophagitis	25	14.7
Hiatus hernia	18	10.7
Oesophageal candida	5	2.9
Hemorrhagic gastritis	4	2.3
Gastric ulcer (no biopsy taken)	3	1.7
Duodenal ulcer + additional P1 pathology	3	1.7
Gastric polyp	3	1.7
Gastric adenocarcinoma	2	1.1
Oesophageal leiomyoma	1	0.5
Oesophageal diverticulum	1	0.5
Diaphragmatic hernia	1	0.5
P1	65	38.9
Gastritis	48	28.7
Duodenitis	5	2.9
Gastroduodenitis	9	5.3
Prepyloric ulcer	6	3.5
Normal gastroscopy (N)	34	20.3

Table 6: Patients demography of each class (N, P1, P2).

Race	n	P1	P2	N
	n, %	n, %	n, %	n
Black	12, (38.7)	9, (29.0)	10, (32.25)	31
White	6 (28.5)	6, (28.5)	9, (42.8)	21
Colored	0, (0.00)	3, (60.0)	2, (40.0)	5
Sex	n, %	n, %	n, %	n
Female	27, (22.8)	41, (24.5)	50, (42.3)	118
Male	7, (14.8)	24, (48.9)	18, (36.7)	49
HIV status	n, %	n, %	n, %	n
Positive	5, (27.7)	3, (16.66)	10, ((55.5)	18
Negative	19, (27.5)	26, (37.6)	24, (34.7)	69
Medications	n, %	n, %	n, %	n
PPI	5, (16.1)	13, (41.9)	13, (41.9)	31
NSAIDS	0, (0.00)	6, (0.5)	6, (0.5)	12
Others	26, (20.9)	44, (35.4)	54, (43.5)	124

according to the gastroscopic and biopsy results. N represents 20.3% (34/167); P1 with 38.9% (65/167) includes the following findings gastritis, duodenitis, gastroduodenitis, and prepyloric ulcer; P2 40,72% (68/167), including patients with reflux oesophagitis, hiatus

Table 7: The median age.

Demography Race	N	P1	P2	p-Value
Black				
Median age	45.5	43	44.5	
25 th %	34.5	28	42	
75 th %	51.5	50	49	
White				
Median age	42.5	50.5	48	0.71
25 th %	39	44	43	
75 th %	53	56	55	
Colored				
Median age	-	45	39,5	
25 th %	-	42	27	
75 th %	-	57	52	
HIV status				
Negative				
Median age	40	42	46	0.51
25 th %	32	30	39	
75 th %	44	52	52	
Positive				
Median age	46	41	44.5	0.51
25 th %	28	28	32	
75 th %	46	50	51	
Gender				
Female				
Median age	44	42	46	0.26
25 th %	38.10	29	38	
75 th %	52	50	51	
Male				
Median age	35	39	43	0.26
25 th %	29	30.5	34	
75 th %	41	45	48	
N+P1+P2 (Median age)	43			

hernia, oesophageal candida, hemorrhagic gastritis, esophageal leiomyoma, esophageal diverticulum, diaphragmatic hernia.

Demographic distribution

Table 6 shows the demographic characteristic of each class (N, P1, P2). In line with the study’s objective, we will be focusing only on the description of P2 patients.

From the gender perspective, 42.3% (50/118) of female patients and 36.7 % (18/49) of male patients had SGF. By race, 32.2% (10/31) of black, 42.5% 9/21 of white patients, and 40.0% (2/5) of colored patients had significant findings on gastroscopy. During the study, 55.5% (10/18) of HIV-positive patients and 34.7% (24/69) of HIV-negative patients were in the P2 category.

Median age

Table 7 analyses the median age. The overall median of the study population was 43 years. The median age of patients with SGF (P2) by race, white patients had the highest MA of 48 (43-55) years, and

coloured patients had the lowest MA age of 39.5 (27-52) years, with a non-significant p-value of 0.71. The median age of P2 HIV-positive patients was 44.5 (32-51) years; for P2 HIV-negative patients, the median age was 46 (39-52) years with a non-significant p-value of 0.51. The median age of P2 female patients was 46 (38-51) years, and P2 male patients had an MA of 43 (34-48) with a non-significant p-value of 0.26.

Discussion

Of the 4,588 patients who underwent a gastroscopy during the study period, only 3.6% (167/4588) patients met the inclusion criteria. Although other patients may be excluded from the study due to other reasons like age, indication for gastroscopy, and presence of alarm features, the overall impression was that the American College of Gastroenterology guidelines in the management of patients with dyspepsia had been followed in these two institutions: A selective approach for gastroscopy for dyspepsia patients below the age of 60 years. This finding demonstrates that only a few young dyspepsia patients got to the endoscopy room in central South Africa during the study period; worldwide statistics show that dyspepsia affects around 20% of the population, yet dyspepsia patients are seldom offered a gastroscopy (3.6%). Of the 4,588 gastroscopies performed from 01, 2018 to 06, 2019, most were done at Universitas Academic Hospital (61.3%). However, in contrast, of the 167 patients who met the inclusion criteria, a large number were from Pelonomi Tertiary Hospital (64.3%). Table 2 shows that patients with dyspepsia between 18 and 59 years without alarm features are more likely to be seen and offered gastroscopy at Pelonomi Tertiary Hospital instead of Universitas Academic Hospital. It can be explained by the fact that Pelonomi, a tertiary hospital, offers at the same time primary and secondary services, and most dyspepsia patients are usually managed at the primary level; UAH, essentially a tertiary hospital, is less likely to manage this category of patients. Therefore, studying dyspepsia at the primary healthcare level may be more appropriate. Both Thomson [13] and Obayo et al. [10] conducted their studies at the primary level and found significant gastroscopic findings among young patients with dyspepsia.

The motivation for the study was born on the fact that local dyspepsia patients have been managed following guidelines suggested by ACG/AGA for patients with dyspepsia, with a cut-off age of 60. However, these two parts of the world have entirely different demography, and the ACG/AGA guidelines are based on American demography. However, according to the current study's findings, race does not seem to influence the median age of dyspepsia patients with significant gastroscopic findings; the p-value (0.71) was insignificant when comparing the median of different races. Again, there is no correlation between gender and median age in dyspepsia patients with significant gastroscopic findings; the p-value was non-significant (0.51). Finally, HIV does not seem to impact the median age of dyspepsia patients with significant gastroscopic findings; the p-value (0.51) was not significant when comparing the median age of HIV-positive and HIV-negative patients in this study.

Thus, referencing Table 7, the demographic data analyzed in this research project could not explain the lower median age of (43 years) for patients with significant gastroscopic findings in central South Africa compared to the 60 that the ACG/CAG has advocated.

However, the result of the study indicates that 40.7% (68/167) of dyspepsia patients aged 18 to 59 years without alarm symptoms and

signs and had the opportunity to have an upper esophagogastroscopy in the two major academic hospitals in central South Africa during the study period had significant clinical findings on gastroscopy. Furthermore, Table 8 indicates that the results were split into ages group (e.g., those age groups 50-59 and 40-49 had respectively 43.5% and 47.4% of patients had significant pathology found); the result demonstrates the high prevalence of SGF across all age groups again.

The results from other researchers are variable Abdeljawad [11] found a low prevalence of significant pathology in Atlanta, USA, while an African study by Obayo [10] found significant pathology in the relatively younger population with dyspepsia in Uganda.

Reflux oesophagitis topping up the list of significant gastroscopic findings with 14.9% (25/167); Moayyedi et al. [14] 2010 had similar finding, followed by hiatus hernia 10.77% (18/167) patients; PPI is part of medical management of these two conditions under discussion and has a variable response. However, patients still need additional investigations (manometry, 24-h esophageal ph. monitoring, and more); also, definitive management like surgery. PPI alone or eradication therapy would have been inappropriate for 2.9% (5/167) of patients with oesophageal candida that need anti-fungal treatment and possibly investigation for immunosuppression; the 1.1% (2/167) of patients with gastric adenocarcinoma need specific management for their condition; for the 0.5% (1/167) with oesophageal diverticulum, the 0.5% (1/167) with esophageal leiomyoma and the 2.3% (4/167) patients with Haemorrhagic gastritis, the 0.5% (1/167) also need appropriate management according to their conditions. The 0.5% (1/167) with diaphragmatic hernia did require semi-urgent surgical management.

Delayed endoscopy favouring initiating treatment with a trial of eradication therapy, PPI, and others, such as prokinetics and antidepressants may seem reasonable and economical. However, the study by Browrey et al. [14], shows that early endoscopic evaluation performed in an open-access endoscopy unit diagnosed earlier-stage cancers with better 5-year survival, although the diagnostic yield is low. There are controversies about prolonged use of PPI, especially in younger patients, a small study attribute PPI and early non-Alzheimer dementia [15]. The possibilities of gastrinoma also have been raised; other complications such as osteoporosis, poor compliance, and long-term cost may also be an issue. The practice of eradication therapy leads to increased use of antibiotics with the risk of increasing resistance to *H. pylori* and other bacteria, the false-negative results to *H. pylori* are typical in low prevalence areas, and many patients remain symptomatic despite the infection being eliminated Moayyedi et al. [16], *H. pylori* eradication reduces the risk of gastric cancer and if so at what stage it can do so. Further, the diagnosis of functional dyspepsia can only be made after a gastroscopy; consequently, the patient will still be classified as having investigated dyspepsia with the risk of delaying definitive management.

Regardless of the race, gender, HIV status, or age groups of patients, the percentage of significant gastroscopic findings was significantly high in every single group. We need more local data and studies to rationalize a set cut-off age for the Central South African population.

Our study has limitations, including being retrospective and lack of data such as helicobacter pylori test results. The two institutions seldom perform this test; consequently, many patients were initiated empirically on antibiotics with the possibility of creating unnecessary

resistance. Also, *H. pylori* being one of the major players in upper gastrointestinal pathology, the results could have helped with a better understanding of the upper GIT pathology. The alcohol and tobacco use status of the patients was very inconsistently recorded in patient files; for this reason, it could not be part of the data, although also part of a significant contributing factor to the Upper GIT pathologies; patients' HIV status and the race, although part of the data was poorly recorded for most of the patients. Demographic data should be interpreted very cautiously because of the quality.

Despite limitations, the study objective was achieved because age, the most critical data, was religiously recorded for all the patients. Hence, the high quality of the document will serve as an essential source of health information for health policy and guidelines in the management of patients with dyspepsia.

Conclusion

Our study shows significant pathology in patients 59 and younger who presented with dyspepsia only without alarm features, although malignancy is not a concern. Their management would have been compromised without a gastroscopy. The demography seems not to impact the median age of dyspeptic patients with significant findings, but more local data are still needed.

Given the findings, we suggest more studies, preferably conducted at primary or secondary healthcare institutions, to develop local guidelines for managing dyspepsia patients. In addition, the cut-off age for gastroscopy in dyspepsia patients should be reviewed to a much younger age.

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