CASE REPORT

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Quality indicators in the gastrointestinal care line of an outpatient clinic in Belo Horizonte, Brazil

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ABSTRACT

Introduction: The Brazilian Unified Health System (SUS) Care Line model aims to establish standardized protocols that optimize healthcare service organization and integration to enhance efficiency and health outcomes within the public health network. **Objective:** To characterize the demographic and clinical profiles of Gastrointestinal Care Line patients at an outpatient clinic and evaluate diagnostic process efficiency. **Methods:** A retrospective cohort study analyzed patient's medical records initiating treatment between August and October 2022, with a 12-month follow-up. Data included anthropometric parameters, lifestyle factors, symptoms, and diagnostic tests. Descriptive statistics and chi-square tests assessed variable outcome associations. Ethical approval was granted (CAAE: 67124822.0.0000.5134). **Results:** We analyzed 76 patients (mean age 58.9 years, 57.3% female). Among follow-up returnees, 74.2% remained in the Care Line, indicating long-term care needs. Gastroesophageal reflux disease affected 27.6%. Upper gastrointestinal endoscopy (UGE) showed abnormalities in 96.6% of cases; colonoscopy and ultrasound detected abnormalities in 55.6% and 58.3% of performed cases. Median waits were 85.48 days for UGE (25% within 5 days), 26.11 days for colonoscopy (75% within 22 days), and 175.17 days for ultrasound. **Conclusion:** The high prevalence of gastrointestinal complications and substantial risk factors demand urgent optimization of diagnostic delays and sustained Care Line engagement for enhanced outcomes.

Keywords: Quality Indicators, Health Care; Gastroenterology; Ambulatory Care.

INTRODUCTION

The Brazilian Unified Health System (SUS) Care Line model is a strategy designed to integrate and coordinate healthcare services, ensuring continuous and efficient care delivery to the population[1]. This model delineates the actions to be implemented across different levels of care—primary, secondary, and tertiary—allocating patients based on their specific healthcare needs. Within the context of Brazilian public health, it structures care flows within the SUS, ensuring that patients receive appropriate treatment. As an organizational framework in healthcare, this approach optimizes resource use, reduces costs, and prevents fragmented care[2]. Thus, it serves as a critical tool for establishing integrated care networks, delivering accessible, efficient, and patient-centered services[3].

The Gastrointestinal Care Line represents a highly relevant framework for organizing care, particularly for patients with chronic diseases requiring ongoing and complex management. Through this system, patients benefit from multidisciplinary care, including access to specialized diagnostic and therapeutic interventions. The Ciências Médicas outpatient clinic is integrated into the SUS Care Line model and provides 100% of its services to SUS users. The clinic currently handles approximately 5,500 consultations per month and operates two Care Lines established with the Belo Horizonte Municipal Health Secretariat (SUS-BH): Cardiovascular and Gastrointestinal. The multidisciplinary team comprises healthcare professionals and students engaged in clinical training activities. Within the gastroenterology sector, the clinic currently manages 1,218 patients with diverse medical conditions[3].

Quality-of-care indicators are essential tools for assessing the performance of healthcare services and the effectiveness of delivered care. These indicators play a crucial role in monitoring and managing key aspects of patient care, such as average waiting times for consultations and procedures, patient return rates, and clinical outcomes4. By analyzing these data, healthcare providers can identify deficiencies and implement continuous improvements in care delivery. Consequently, it is imperative that healthcare professionals and administrators closely monitor these indicators, striving to achieve the highest possible standard of patient care[5].

Within the Care Line framework, evaluating quality indicators is critical to assess its effectiveness in ensuring comprehensive and continuous healthcare access. This monitoring process enables necessary adjustments and enhancements to ensure the model successfully meets patients' needs[6].

Therefore, this study aims to evaluate quality indicators at an academic outpatient clinic within the SUS network to assess whether implementing the Gastrointestinal Care Line model has enhanced healthcare accessibility. Additionally, it seeks to identify potential areas for improvement, contributing to the ongoing optimization of healthcare services provided to the population.

METHODS

Study Design

This retrospective cohort study was conducted by collecting and analyzing medical records of patients treated at an outpatient clinic affiliated with Faculdade Ciências Médicas de Minas Gerais and the SUS in Belo Horizonte, Brazil. The research project was approved by the Research Ethics Committee of the Faculdade Ciências Médicas de Minas Gerais (CAAE: 67124822.0.0000.5134).

Participants

The study included all patients from the Gastrointestinal Care Line at the outpatient clinic who underwent their first consultation between August and October 2022 and returned for a follow-up visit. Follow-up visits for these patients were evaluated over one year. There were no exclusion criteria for the study sample.

Instruments and Procedures

In the first phase of the study, data from medical records concerning each patient's initial consultation were analyzed. The following information was collected from electronic records: demographic characteristics, including sex, age, smoking status, alcohol consumption, and family history of neoplasia. Additionally, health indicators such as body mass index (BMI) and the presence or absence of physical activity were evaluated. Clinical diagnoses were recorded using International Classification of Diseases (ICD) codes related to gastrointestinal conditions identified during the initial consultation. Finally, all diagnostic tests requested by the physician during the first appointment were documented. In the second phase of the study, data from follow-up consultations during the year following the initial appointment were collected. The results of diagnostic tests ordered at the initial consultation were assessed, along with the time interval between the request and completion of these tests. Clinical outcomes after one year of follow-up were classified as discharge from the care pathway, discharge with shared care at the primary healthcare unit (UBS), or continuation in the Care Line.

Statistical Analysis

Statistical analyses were performed using Jamovi statistical software, version 2.3.28. Descriptive statistics and the chi-square test were used to assess the impact of the investigated variables on study outcomes.

RESULTS

Seventy-six patients from the Gastrointestinal Care Line were enrolled in the study. The cohort median age was 61 years (range: 22–85 years), indicating a predominance of elderly patients. Women accounted for 57.3% of the sample, while men represented 42.7%. Concerning lifestyle factors, 38.7% of participants reported alcohol consumption, though data on this variable were missing for 15 patients in their medical records. Similarly, 38.4% of participants were smokers, with data unavailable for two individuals. The mean BMI was 26.83, suggesting that most participants were overweight. Only 23.9% reported engaging in regular physical activity, indicating that over 70% of the cohort were sedentary.

Regarding the conditions treated in the Care Line, gastroesophageal reflux disease (GERD) (K21) was the most prevalent disorder, affecting 27.6% of patients, followed by dyspepsia (K30), which affected 14.5% (Table 1). Analysis of family history revealed that 36.1% had a positive history of gastrointestinal cancer, with intestinal cancer being predominant, accounting for 7.7% of the patients.

TABLE 1: Distribution of Primary ICD Codes Among Patients in the Care Line

ICD	Count	% of total
K21	13	17,1%
K29	6	7,9%
K70.3	4	5,3%
K74	3	3,9%
K74.6	2	2,6%
K76	3	3,9%
R10	5	6,6%
R11	2	2,6%
K30	11	14,5%

Legend: K21 (Gastroesophageal Reflux Disease), K29 (Gastritis and Duodenitis), K70.3 (Alcoholic Liver Cirrhosis), K74 (Fibrosis and Liver Cirrhosis), K74.6 (Primary Biliary Cirrhosis), K76 (Other Liver Diseases), R10 (Abdominal and Pelvic Pain), R11 (Nausea and Vomiting), K30 (Dyspepsia). ICD: International Classification of Diseases

The most frequently requested examination was upper gastrointestinal endoscopy, ordered for 46% of patients. Among these, 38.7% underwent the procedure. Abnormal findings were observed in 96.6% of completed examinations. Esophagitis was detected in 58.6% of cases, mostly classified as mild (37.9%). Gastritis was identified in 93.1%, predominantly mild (69%). The duodenum was the least affected segment, appearing normal in 79.3% of cases. In contrast, fewer colonoscopies and abdominal ultrasounds were performed (56.3% and 46.2%, respectively) (Table 2). Colonoscopy findings were abnormal in 55.6% of cases, while abnormalities were detected in 58.3% of abdominal ultrasounds.

TABLE 2: Distribution of requested diagnostic examinations and their findings

UPPER GASTROINTESTINAL ENDOSCOPY			
Requested (n)	75		
Performed (n, %)	29 (38.7%)		
Esophagitis (n, %)	17 (58.6%)	Mild	11 (37.9%)
		Moderate	5 (17.2%)
		Severe	1 (3.4%)
Gastritis (n, %)	27 (93.1%)	Mild	20 (69%)
		Moderate	7 (24.1%)
H. pylori positivity (n, %)	29 (100%)	Positive	2 (6.9%)
		Negative	27 (93.1%)
COLONOSCOPY			
Requested (n)		16	
Performed (n, %)		9 (56.3%)	
Normal (n, %)		4 (44.4%)	
Abnormal (n, %)		5 (55.6%)	
ABDOMINAL ULTRASOUND			
Requested (n)		26	
Performed (n, %)		12 (46.2%)	
Normal (n, %)		5 (41.7%)	
Abnormal (n, %)		7 (58.3%)	

Waiting times varied significantly among diagnostic examinations. The mean waiting time for upper gastrointestinal endoscopy was 85.48 days, though 25% of examinations were completed within five days. Colonoscopy had a shorter mean waiting time of 26.11 days, with the majority (75%) completed within 22 days. Conversely, abdominal ultrasonography had a considerably longer mean waiting time of 175.17 days.

The mean interval between the initial consultation and follow-up was approximately 45 days. Overall, 77.6% of patients returned for follow-up, while 22.4% did not return during the study period. Among those who returned for follow-up (77.6%), the majority (74.2%) remained within the Care Line, while only 8.1% were discharged with shared care at their primary healthcare unit, and 17.7% were completely discharged from the Care Line.

DISCUSSION

This study provides a comprehensive analysis of quality indicators within the SUS Gastrointestinal Care Line, revealing critical measurements pertinent to care management delivered through the public health system. Concerning the demographic characteristics, the mean age of the study participants was 58.9 years, with a median age of 61 years (range: 22–85 years), demonstrating a marked predominance of elderly individuals, consistent with the elevated prevalence of gastrointestinal conditions among older adults. The predominance of women (57.3%) is aligned with existing literature, potentially due to hormonal factors influencing this pattern[7]. The causal relationship remains ambiguous regarding whether emotional changes precipitate or result from gastrointestinal disorders; nevertheless, gastrointestinal symptoms, irrespective of their association with emotional disorders, significantly impair women's quality of life, often prompting them to seek medical care more often than men. Moreover, prolonged delays in accurately diagnosing specific gastrointestinal diseases can substantially worsen adverse clinical outcomes for patients.

The markedly elevated prevalence of alcohol consumption (38.7%) and smoking (38.4%) among study participants underscores a well-documented association: these behavioral patterns constitute significant risk factors for a spectrum of gastrointestinal diseases, including GERD, peptic ulcers, esophageal cancer, colorectal cancer, and pancreatitis[8]. These observations strongly reinforce the imperative for an integrated, multifaceted approach that addresses not only the underlying pathologies but also their associated behavioral risk factors. Therefore, implementing primary prevention strategies targeting these risks, as delineated in the pre-pathogenesis framework articulated by Lewis and Clark (1965), is essential to reduce disease burden[9].

As documented in the literature, overweight and obesity are strongly linked to an elevated risk of numerous pathological conditions, significantly contributing to increased global morbidity and mortality. Specifically, excess weight is a well-established risk factor for a diverse array of gastrointestinal disorders[10]. Our findings confirm this association, as the mean BMI of the study cohort was 26.83, categorized as overweight according to WHO standards. These findings strongly emphasize the importance of promoting healthy weight management and adopting balanced lifestyle practices to reduce the risk of developing gastrointestinal diseases[11].

The striking prevalence of GERD (27.6%) and dyspepsia (14.5%) illustrates the substantial clinical burden these conditions exert on this outpatient clinic. Our results demonstrate a substantially higher prevalence of GERD among patients relative to national estimates, which indicate a prevalence of approximately 12% in Brazil[12]. Conversely, the prevalence of dyspepsia ob-

served in our setting closely matches that reported in prior Brazilian studies, with prevalence rates ranging from 10% to 20%, depending on the diagnostic criteria employed[13].

The considerable proportion of participants with a family history of gastrointestinal neoplasia (36.1%) strongly highlights the imperative for robust screening and preventive interventions within the Care Line framework. For a condition to merit inclusion in the Care Line, it must constitute a significant public health challenge, exhibit a discernible preclinical phase, and yield clear benefits from early therapeutic intervention. Furthermore, the screening modality must demonstrate acceptable accuracy, feasibility, reproducibility, and cost-effectiveness[14]. Presently, colorectal cancer represents the sole gastrointestinal malignancy with established screening protocols. Nonetheless, evaluating family history remains crucial, even in the absence of standardized screening, enabling healthcare providers to offer tailored guidance, increase patient awareness, and clarify potential risks and warning signs.

Our data reveal that 77.6% of patients returned for follow-up, demonstrating robust adherence to ongoing medical care. These findings suggest that the outpatient clinic effectively manages patient conditions over an extended period, delivering continuous and individualized treatment. Such continuity is essential for the effective management of chronic gastrointestinal diseases, ensuring rigorous disease monitoring and timely interventions. Examining absenteeism as a quality indicator is critical for enhancing service quality[15], as it reflects not only patient adherence but also the efficacy of scheduling protocols, transportation logistics to the outpatient facility, and communication dynamics between patients and the healthcare team.

The vast majority (74.2%) of participants remained engaged within the Care Line, whereas a substantial minority (8.1%) were transitioned to shared care at their primary healthcare unit (UBS), and 17.7% were completely discharged. Within the Care Line paradigm, discharging patients whose conditions have been adequately managed or can be effectively overseen at a primary care level is crucial, facilitating access for new patients with severe or complex conditions to specialized care. This strategy optimizes the judicious allocation of health resources, ensuring timely and appropriate care for those with the greatest need. The Care Line model orchestrates healthcare delivery and patient care pathways, streamlining transitions to less intensive care levels when appropriate, fostering the sustainability of health services, and enhancing access to specialized interventions[16]. However, additional research is necessary to rigorously assess the long-term clinical outcomes, quality of life, and functional status of patients post-discharge from the Care Line or transition to shared care, thereby refining care transition protocols.

Regarding diagnostic evaluations, our findings indicate that upper gastrointestinal endoscopy was requested for 46% of study participants, with abnormal findings detected in 96.6% of performed procedures. The consistent identification of abnormalities confirms the diagnostic efficacy of this modality in early detection and disease surveillance, emphasizing its pivotal role in evaluating gastrointestinal conditions[17]. Furthermore, its capacity to integrate diagnostic assessment and therapeutic management within a singular procedure substantially improves clinical outcomes and patient care efficacy.

Conversely, the disproportionately low utilization of colonoscopies (56.3%) and abdominal ultrasounds (46.2%) indicates potential deficiencies in resource allocation or scheduling efficacy, given that these modalities identified abnormalities in 55.6% and 58.3% of cases, respectively. These observations strongly affirm the indispensable contributions of these examinations to early diagnosis and comorbidity evaluation, parti-

cularly for conditions such as colorectal cancer, which colonoscopy identifies with superior precision[18], and hepatic disorders, which are optimally visualized through ultrasonography[19].

Our findings reveal significant variability in waiting times for diagnostic procedures, highlighting substantial barriers to achieving timely access, especially for abdominal ultrasounds (175.17 days). The briefest waiting period was associated with colonoscopy (26.11 days), demonstrating the outpatient clinic's enhanced capacity to facilitate access, whereas upper gastrointestinal endoscopy demonstrated an intermediate waiting duration (85.48 days), potentially leading to delays in early disease detection and the initiation of optimal therapeutic regimens, particularly for conditions requiring urgent intervention[20].

Moreover, our analysis identified significant deficiencies in the medical records of the evaluated study participants, which undermined the quality and reliability of the research. At the outpatient facility, a structured anamnesis form delineates critical elements for exploration during gastrointestinal consultations; however, our review disclosed that numerous fields were consistently left incomplete or omitted. For example, alcohol consumption data were absent for 15 patients, and BMI, a key indicator of nutritional status, was unreported for 68 individuals. The incomplete documentation of lifestyle variables, including smoking, physical activity, and dietary habits, can significantly hinder the capacity to analyze their associations with clinical outcomes, thereby introducing a notable risk of bias in research findings and seriously compromising the continuity and efficacy of medical care. Consequently, strengthening data collection and documentation protocols is vital to ensure a more precise assessment of the care context and reinforce the credibility of scientific investigations critical for driving advances in clinical practice.

CONCLUSION

This study underscores the critical need for timely diagnostic procedures and individualized lifestyle interventions to optimize patient outcomes in gastroenterology, providing pivotal insights for enhancing Care Line management and elevating care quality.

Our findings offer a concise yet comprehensive understanding of the population's key characteristics and healthcare needs, emphasizing the elevated prevalence of GERD and dyspepsia, which demand heightened prioritization within the Care Line to streamline case management and patient flow. The significant burden of risk factors, including smoking, alcohol consumption, and overweight, firmly establishes their association with the comorbidity profile of this cohort, necessitating targeted patient education on the health consequences of these behaviors. Implementing lifestyle modifications—such as smoking cessation, alcohol reduction, and weight management—is indispensable to mitigate the risk of gastrointestinal diseases and reduce severe case incidence, delivering substantial public health benefits and aligning with SUS principles.

Moreover, the results highlight the necessity of sustained long-term patient follow-up and reveal pronounced inconsistencies in waiting times for essential diagnostic tests, particularly abdominal ultrasound, indicating the need for strategic improvements to optimize treatment efficacy and enhance patient outcomes.

Nonetheless, it is critical to recognize that a considerable proportion of diagnostic procedures yielded findings with minimal clinical relevance, prompting a reassessment of the exclusive focus on expediting test completion. Expanding this evaluation to identify patients requiring in-depth investigation is vital to ensure efficient resource allocation, minimize over-

diagnosis, mitigate economic burdens, and support the long-term sustainability of the SUS through quaternary prevention.

While rapid diagnostic testing remains a core quality indicator, it is equally imperative to critically assess the clinical necessity of each test, advocating for a balanced approach that prevents overdiagnosis, reduces healthcare costs, and bolsters healthcare efficiency within the SUS framework.

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