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Availability and Distribution of Endoscopists in Chile: The First National Survey and the Need for Comparative Data in Latin America

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Abstract

Background: *Gastric and colorectal cancers remain major causes of morbidity and mortality in Chile and worldwide, and their prognosis largely depends on early diagnosis. Digestive endoscopy is the main tool for detecting preneoplastic lesions and early-stage neoplasms. However, Chile lacks a national endoscopic screening program, and the actual availability of endoscopists is not precisely known, making it difficult to assess the feasibility of population-based screening strategies.*

Objective: *To characterize the number, geographic distribution, and professional training of medical endoscopists in Chile, in order to identify gaps relative to international standards and to estimate human resource needs for future screening programs.*

Methods: *An observational, descriptive, cross-sectional study based on a digital survey applied to physicians performing upper gastrointestinal endoscopy and/or colonoscopy in public and private healthcare centers. Information was triangulated with institutional directories and endoscopic equipment suppliers to validate estimates of the total number of specialists. Data were analyzed using descriptive statistics and contextualized with preliminary census population data (INE 2024).*

Results: *Of an estimated total of 641 endoscopists, 453 valid surveys were obtained. The estimated national rate was 32.3 endoscopists per million inhabitants, with marked geographic disparities: the lowest rates were observed in Tarapacá and Maule, and the highest in the Metropolitan Region, Aysén, and Magallanes. Overall, 51.7% of physicians worked in both the public and private sectors, while 17.9% worked exclusively in the public sector. Regarding training, 82.6% reported formal subspecialty training, mainly in adult gastroenterology.*

Conclusions: *Chile has an insufficient and territorially uneven supply of digestive endoscopists, which hinders the implementation of screening programs comparable to international models. Public policies are needed to establish a national registry, expand and standardize training, promote equitable redistribution of human resources, and assess the feasibility of endoscopic screening programs. These measures are essential to strengthen early detection and reduce the burden of digestive cancers in the country.*

Keywords: Digestive Endoscopy, Endoscopists, Workforce Distribution, Geographic Disparities, Health Workforce.

Introduction

Gastric and colorectal cancers are among the leading causes of oncological morbidity and mortality worldwide. In Chile, both conditions generate a high clinical and economic burden, constituting a public health problem of growing relevance. They represent a major challenge for healthcare systems due to their high incidence and the fact that prognosis largely depends on the stage at diagnosis. Nevertheless, opportunities for early diagnosis remain limited, despite strong evidence demonstrating significant improvements in clinical outcomes when early detection is achieved [1-8].

Upper gastrointestinal endoscopy and colonoscopy are currently the methods of choice for the diagnosis, treatment of preneoplastic lesions and early cancers, and follow-up of these conditions. However, the absence of national systematic screening programs and the likely shortage of physicians trained to perform endoscopic procedures limit timely access to diagnosis. This situation persists despite advances in public policies aimed at improving equity and timeliness of care [9-13].

Although there is no standardized number of endoscopists per capita, international medical publications provide comparative references . Industry estimates, in the absence of reliable data in the medical literature, suggest approximately 280–300 endoscopists per million inhabitants in Japan, 180– 200 in South Korea, 110–140 in the United States, and 70–90 in the United Kingdom . These variations highlight the wide global heterogeneity in specialist availability and allow Chile's situation to be contextualized relative to healthcare systems with more robust screening programs [14-22].

In this context, it is essential to understand the current situation regarding the total number of physicians dedicated to digestive endoscopy in Chile. This study aims to characterize the number, distribution, and training of endoscopists in the country, in order to identify gaps relative to international models. This analysis will allow estimation of the specialized human resources required for the potential implementation of protocolized screening programs aimed at improving access to and quality of diagnosis and treatment.

Methods

Study Design

An observational, descriptive, cross-sectional study was conducted based on data collected through a digital survey applied to physicians performing endoscopic procedures in Chile.

The primary objective was to determine the total number of digestive endoscopists in the country, their geographic distribution, and regional concentration.

Secondary Objectives Included

Characterizing physicians' endoscopic training.

Analyzing the distribution of endoscopists between the public and private healthcare sectors.

The project was reviewed and approved by the Scientific Ethics Committee of Clínica Universidad de los Andes (approval code CEC2025053), in accordance with the principles of the Declaration of Helsinki. All participants provided informed consent prior to completing the survey, which clearly stated the study objectives and data confidentiality safeguards [23].

Population and Inclusion Criteria

The survey targeted physicians performing upper and/or lower gastrointestinal endoscopies in public and private healthcare centers in Chile. Physicians in training who had not completed a specialization program and those not actively practicing digestive endoscopy were excluded.

Data Collection and Validation Strategy

The estimation and corroboration of the number of endoscopists was carried out in three complementary phases:

Initial Estimation

Preliminary identification of endoscopists through clinics, hospitals, and medical centers nationwide, using institutional directories and professional contacts.

External Validation

Independent corroboration using information provided by companies involved in the distribution of endoscopic towers, equipment, and supplies in Chile. This triangulation increased the reliability of the estimated number of practicing physicians. A total universe of 641 endoscopists was assumed after combining and cross-checking databases [24-25].

Survey Dissemination and Follow-up

The survey was disseminated with the support of major national scientific societies related to digestive endoscopy. Distribution was carried out via email and text messages to endoscopists across regions and medical centers. Respondent lists were reviewed with regional and institutional representatives to identify missing physicians, repeating the process iteratively to maximize coverage and representativeness [26-27].

Survey Instrument

The survey was developed using Google Forms and included closed-ended and multiple-choice questions addressing sociodemographic variables, academic training, and type of institution where physicians practice. (Table 1)

Table 1: Study Variables

Variable	Conceptual Definition	Operational Definition
Regions	Place of work of the endoscopist physician	Registration will be based on the job performance region number.
Institution	Type of establishment where the doctor carries out their healthcare work	It will be classified as: Public (including Armed Forces) or Private

Professional Title	Highest academic degree or medical specialty obtained	It will be categorized into: General Medicine, Internal Medicine, General Surgery, Pediatrics, Pediatric Surgery, Gastroenterology, Pediatric Gastroenterology, Coloproctology, Endoscopic Surgery, Digestive Surgery

Statistical Analysis

Data were anonymized and analyzed using Microsoft Excel and SPSS Statistics. Descriptive statistics were applied, with results expressed as absolute frequencies, percentages, means, and standard deviations as appropriate. Preliminary population data from the 2024 national census (INE) were used to contextualize geographic distribution and estimate regional density indicators.

Results

Of the estimated total of 641 endoscopists, 453 valid surveys were received (70.7% response rate), all with informed consent. The estimated national rate was 32.3 endoscopists per million inhabitants. The lowest regional rates were observed in Tarapacá and Maule (10.8 and 12.5 per million inhabitants, respectively), while the highest were in the Metropolitan Region, Aysén, and Magallanes (55.3, 49.6, and 48.0 per million inhabitants, respectively) (Table 2). These figures may be slightly underestimated, as they were calculated using 2024 census data rather than population projection.

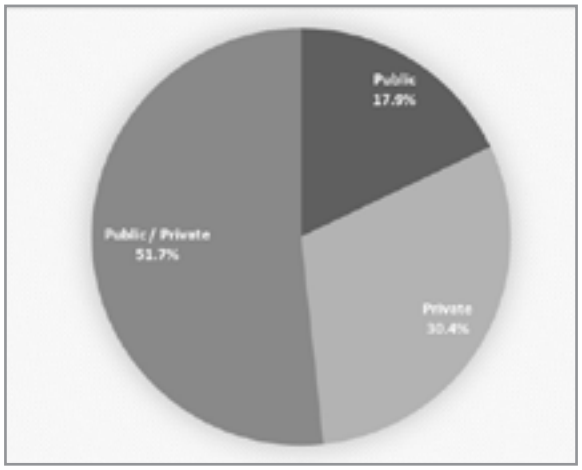
Table 2: Total Number of Surveys Answered and Estimated Number of Endoscopists per Population

Region	Number of Surveys Answered	Estimated Number of endoscopists	Population Counted (2024)	Estimated Population 2025	Endoscopists / 1,000,000
Inhabitants					
Arica	5	5	244.569	-	20,4
Tarapacá	4	4	369.806	-	10,8
Antofagasta	14	14	635.416	-	22,0
Atacama	6	6	299.180	-	20,0
Coquimbo	22	22	832.864	-	26,4
Valparaíso	31	31	1.896.053	-	16,3
Metropolitana	229	409	7.400.741	-	55,3
O'Higgins	21	21	987.228	-	21,3
Maule	12	14	1.123.008	-	12,5
Ñuble	10	10	512.289	-	19,5
Biobío	33	33	1.613.059	-	20,5
La Araucanía	22	25	1.010.423	-	24,7
Los Ríos	12	12	398.230	-	30,1
Los Lagos	19	22	890.284	-	24,7
Aysén	5	5	100.745	-	49,6
Magallanes	8	8	166.537	-	48,0
National total	453	641	18.480.432	19.860.000	32,3

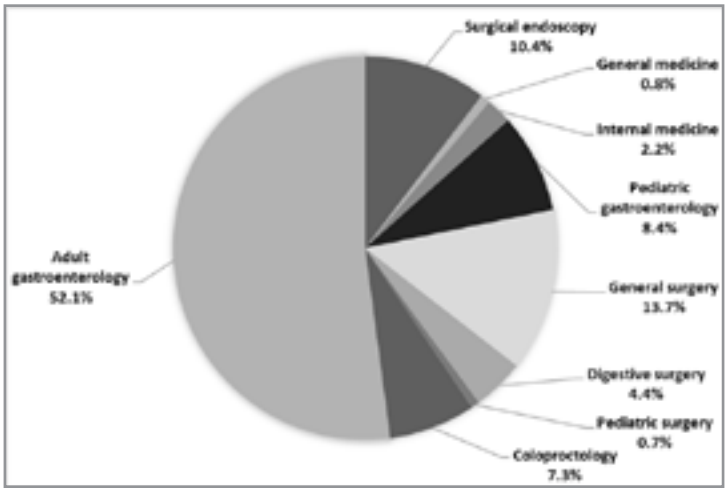
Overall, 63.8% of endoscopists practiced in the Metropolitan Region. Regarding workplace setting, 17.9% worked exclusively in the public sector, 30.4% exclusively in the private sector, and 51.7% in both systems (Graph 1). In terms of training, 82.6% reported subspecialty training derived from internal medicine, surgery, or pediatrics, with adult gastroenterology representing the largest proportion (52.1%) (Graph 2).Regarding procedures performed, 11.5% performed only upper endoscopy, 6.6% only colonoscopy, and 81.9% performed both[28-29]. (Table 3)

Table 3: Endoscopic Procedures Performed by the Surveyed Physicians

Technique	Doctors
Upper digestive endoscopy	52
Colonoscopy	30
Upper digestive endoscopy / Colonoscopy	371
Total	453



Graph 1: Labor Distribution of Endoscopist Physicians



Graph 2: Endoscopic Training of Physicians

Discussion

Endoscopic screening is a fundamental tool for early detection of digestive neoplasms, as demonstrated by programs implemented in several developed countries, where systematic application has reduced mortality from gastric and colorectal cancer. In Chile, the absence of a national screening program, combined with the heterogeneous geographic distribution of endoscopists, limits early detection. In this context, understanding the availability and distribution of trained professionals is essential for healthcare planning and future screening implementation.

This study represents one of the first efforts to quantify the endoscopist workforce in a Latin American country, providing novel evidence that may serve as a basis for comparative studies and regional public policy development. Although there is no international consensus on the optimal number of endoscopists per capita, the results suggest that Chile's current supply is insufficient to achieve effective screening coverage, a situation exacerbated in remote regions due to connectivity and access barriers [30-31].

With respect to training, Chile shows a high proportion of physicians with formal subspecialty training in digestive endoscopy, which positively impacts the quality and safety of procedures. However, scientific societies face the ongoing challenge of expanding access to structured training for physicians without this background.

The distribution of human resources between public and private sectors revealed marked inequities. Although approximately 85% of the Chilean population relies on the public healthcare system, specialized endoscopy services are disproportionately concentrated in the private sector. This imbalance highlights a significant gap between population needs and specialist availability, with potential consequences for equity and timely access to endoscopic diagnosis.

Overall, the findings indicate that the number of endoscopists in Chile is likely insufficient compared with countries that have successfully reduced digestive cancer mortality through screening programs. Unequal regional and sectoral distribution further underscores the need for public policies aimed at workforce expansion, training, and territorial equity. Although the survey does not constitute a complete census, it represents the first systematic national effort to assess installed capacity and guide future health planning strategies [32].

Conclusions

Chile has an insufficient and unevenly distributed supply of endoscopists across regions and between the public and private sectors. This situation limits the healthcare system's ability to provide timely detection of highly prevalent digestive diseases and to advance toward population-based screening strategies comparable to those implemented in other countries. To address these gaps, public policies must focus on strengthening both availability and equity in specialist distribution.

Priority actions include:
Creation of a national endoscopist registry under the Ministry of Health, to accurately identify the number, location, and training characteristics of professionals and support rigorous healthcare planning.

Expansion and standardization of specialized training, increasing positions and harmonizing subspecialty programs related to endoscopy and colonoscopy. Strategic redistribution of human resources, promoting mechanisms that facilitate specialist placement in underserved areas based on population needs and reducing disparities between public and private systems. Evaluation of endoscopic screening programs, assessing feasibility and cost-effectiveness for gastric and colorectal cancer screening in light of international evidence and national capacity. The adoption of these measures would contribute to improved early detection of digestive neoplasms and, ultimately, to reducing the cancer burden in the Chilean population. These actions represent a decisive step toward a more equitable, efficient, and prevention-oriented healthcare system.

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