



ARTÍCULO ORIGINAL

Scientific productivity of gastroenterologists in Peru: a nationwide cross-sectional study

Producción científica de los gastroenterólogos del Perú: estudio transversal de alcance nacional

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Conflict of interest

None.

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ABSTRACT

Objectives: To describe the characteristics of scientific publications by Peruvian gastroenterologists. **Materials and methods:** A descriptive cross-sectional study was conducted in a random sample of 357 gastroenterologists registered with the Colegio Médico del Perú as of July 2025. The literature search was performed in PubMed/MEDLINE, Scopus, and Google Scholar between August and October 2025, including articles published up to 2024. **Results:** Most gastroenterologists were male (64.2%), with a median age of 49 years (IQR: 39-63). Overall, 42.9% had published at least one scientific article, mostly 1-2 publications; only 5.9% had more than 10 articles. The median h-index was 1 (IQR: 1-2). A total of 559 articles were identified, of which 61.5% were published in Peruvian journals and 67.3% in Spanish. Original articles accounted for 56.7%, predominantly with analytical designs, and 53.9% were published in Q3-Q4 journals. The median number of citations per article was 2 (IQR: 0-6). Among articles with more than 10 citations, only 10.2% had a Peruvian gastroenterologist as first author. The main research topics were *Helicobacter pylori* and gastric diseases, hepatology, and diagnostic and therapeutic endoscopy. **Conclusions:** Fewer than half of Peruvian gastroenterologists have published at least one scientific article, and among those who did, both productivity and academic impact were low. Publications were mainly concentrated in local, lower-quartile journals, with few citations.

Keywords: Biomedical Research; Bibliometrics; Publications; Gastroenterology; Peru (source: MeSH NLM).

RESUMEN

Objetivos: Describir las características de las publicaciones científicas de los médicos gastroenterólogos del Perú. **Materiales y métodos:** Estudio transversal descriptivo realizado en una muestra aleatoria de 357 médicos gastroenterólogos registrados en el Colegio Médico del Perú hasta julio de 2025. La búsqueda se realizó en PubMed/MEDLINE, Scopus y Google Scholar, entre agosto y octubre de 2025, incluyendo artículos publicados hasta 2024. **Resultados:** El 64,2% de los gastroenterólogos fueron hombres, con una mediana de edad de 49 años (RIC: 39-63). El 42,9% había publicado al menos un artículo científico, la mayoría con 1-2 publicaciones; solo el 5,9% tuvo más de 10 artículos. La mediana del índice h fue 1 (RIC: 1-2). Se identificaron 559 artículos, de los cuales el 61,5% se publicó en revistas peruanas y el 67,3% en español. El 56,7% fueron artículos originales, predominantemente analíticos, y el 53,9% se publicó en revistas Q3-Q4. La mediana de citaciones por artículo fue 2 (RIC: 0-6). Entre los artículos con más de 10 citaciones, solo el 10,2% tuvo como primer autor a un gastroenterólogo peruano. Los principales tópicos de investigación fueron *Helicobacter pylori* y enfermedades gástricas, hepatología, y endoscopia diagnóstica y terapéutica. **Conclusiones:** Menos de la mitad de los médicos gastroenterólogos peruanos ha publicado al menos un artículo científico y, entre quienes lo hicieron, la producción y el impacto académico fueron bajos. Las publicaciones se concentraron principalmente en revistas locales y de menor cuartil, con escasas citaciones.

Palabras clave: Investigación Biomédica; Bibliometría; Publicaciones; Gastroenterología; Perú (fuente: DeCS BIREME).

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INTRODUCTION

Scientific research and the evidence it generates are fundamental to the advancement of health care ⁽¹⁾, as their impact extends beyond the clinical setting, contributing to economic and social development through the generation of scientific publications, patents, and the approval of new drugs and health technologies ⁽²⁾. This is particularly relevant in specialties such as gastroenterology, where research is essential for improving the understanding of gastrointestinal diseases and for driving the development of new diagnostic and therapeutic technologies ^(3,4).

Although Latin America has shown a moderate increase in health-related scientific production, Peru continues to demonstrate comparatively low levels of research productivity relative to other countries in the region ⁽⁵⁾, with particularly limited output in the field of medicine ⁽⁶⁾. Even among specialized public health institutes, most have not shown a consistent upward trend in scientific publications ⁽⁷⁾.

Among Peruvian gastroenterologists, a survey conducted more than a decade ago (2009) reported low levels of scientific productivity and limited knowledge of research methodology ⁽⁸⁾. Despite the time elapsed, we have not identified recent studies assessing the scientific output of this professional group. Given that research productivity is widely regarded as an indicator of academic development and capacity for evidence-based clinical practice, the objective of this study was to describe the characteristics of the scientific publications of gastroenterologists in Peru.

MATERIALS AND METHODS

Study design and population

A descriptive cross-sectional study was conducted. The study population included all 1,293 physicians registered with the Colegio Médico del Perú (CMP) with a specialty in gastroenterology as of July 2025. The list of gastroenterologists is publicly available through the CMP website (available at: <https://www.cmp.org.pe/conoce-a-tu-medico/>).

Sample

The sample size was calculated using OpenEpi software. Assuming a total population of 1,293 gastroenterologists, an expected scientific publication proportion of 50%, a margin of error of 5%, and a 95% confidence level, the estimated required sample size was 297 gastroenterologists. To account for potential missing data, a 20% increase was applied, resulting in a final sample size of 357 gastroenterologists.

Participants were selected using simple random sampling by entering the unique identifier number of each gastroenterologist into a database and generating the random sample using Stata software.

Search strategy

A systematic search was conducted in three databases: PubMed/MEDLINE, Scopus, and Google Scholar, between

August and October 2025. These databases were selected to maximize coverage of Peruvian scientific production in gastroenterology by combining international biomedical databases with broad citation coverage (Scopus and MEDLINE) and an open-access search engine (Google Scholar) ^(9,10). The search strategy consisted of all possible combinations of first names and surnames of each included physician, considering common Hispanic naming conventions (including paternal and maternal surnames, as well as variations in name order and abbreviations), with the addition of the term "Peru" as an auxiliary search term.

Search terms were adapted according to the indexing structure of each database. For example, for the physician Diego Ricardo Paucar Aguilar, searches in PubMed/MEDLINE and Google Scholar included combinations such as Diego Ricardo Paucar Aguilar, Diego Paucar Aguilar, Paucar Aguilar DR, Paucar Aguilar D, Paucar D, and Paucar DR. In Scopus, searches were performed within the author search function using combinations of the Last name and First name fields (e.g., Last name: Paucar Aguilar or Paucar; First name: Diego). Each retrieved article was subsequently reviewed manually to avoid misclassification due to homonyms. Author identity was validated based on affiliation with a Peruvian institution, consistency with the physician's known field (gastroenterology or related areas), and concordance with co-authorship patterns or publication history. This search strategy was used in previous studies ⁽¹¹⁻¹³⁾.

Articles were eligible if they met the following criteria: (a) listed a gastroenterologist registered with the CMP as an author; and (b) were published up to the year 2024. All articles published in scientific journals were considered. Technical reports, editorials, books, theses, conference abstracts, and posters were excluded. Clinical practice guidelines were also excluded because they are typically developed by professional societies or consensus groups and do not necessarily reflect individual scientific productivity.

The search and identification of scientific articles were performed independently by two pairs of investigators (SAC/KCB and PVL/ZHV) and supervised by DLQ. The resulting databases were subsequently merged, and any discrepancies were resolved by consensus among the full research team after review of the discrepant records and targeted re-search of the corresponding publications.

Gastroenterologist-level variables

Sex, age, and years of professional experience were collected for each gastroenterologist using publicly accessible databases. Age was estimated based on year of birth, using 2025 as the reference year.

Years of professional experience were defined as the time elapsed between completion of specialty training in gastroenterology and the year 2025. This variable was categorized into four groups: (a) ≤5 years, (b) 6-10 years, (c) 11-20 years, and (d) >20 years. The year of completion of specialty training was obtained from the Superintendencia Nacional de

Educación Superior Universitaria (SUNEDU) registry (<https://onlinea.sunedu.gob.pe/>) using each physician's full name.

Additionally, we identified whether each physician was registered as a researcher in the Registro Nacional Científico, Tecnológico y de Innovación Tecnológica (RENACYT), maintained by the Consejo Nacional de Ciencia, Tecnología e Innovación (CONCYTEC). RENACYT is a national researcher classification system that ranks investigators into eight levels (from Level VII to "Distinguished Researcher") according to academic degree, scientific or technological output, and thesis supervision activities ⁽¹⁴⁾.

We also collected variables related to scientific productivity, including: publication of at least one article in a scientific journal, publication within the last five years (2020-2024), publication within the last two years (2023-2024), and publication prior to completion of gastroenterology specialty training.

As a bibliometric indicator of scientific impact, the h-index was calculated for each gastroenterologist based on Scopus data. When multiple author profiles were identified for a single physician, publications and citations from these profiles were manually aggregated, and the h-index was subsequently recalculated. The h-index was defined as the value *h* when the physician had at least *h* publications with $\geq h$ citations each ⁽¹⁵⁾. Scopus was used as the primary source for bibliometric indicators because it provides standardized citation metrics, author profiles, and journal quartile classifications that are widely used in bibliometric analyses ⁽⁹⁾.

Article-level variables

For each scientific article, the following variables were extracted: journal name and country, publication language, year of publication, journal quartile (Q1-Q4), article type (original article, letter to the editor/scientific letter, case report, other), whether the included gastroenterologist was listed as first author, whether the included gastroenterologist was listed as corresponding author, and the study design of the original article (descriptive, analytical, or experimental).

An original article was defined as a publication that included the sections Introduction, Methods, Results, and Discussion (or equivalent headings). Journal quartiles were determined using the Scimago Journal Rank (SJR) from Scopus corresponding to the year of publication. When a journal had multiple quartile rankings within the same year due to classification in more than one subject category, the category related to gastroenterology or hepatology was prioritized, and the highest quartile ranking was selected. Original articles were further classified according to their primary research topic.

Statistical analysis

Data analysis was performed using Stata version 18.0. Categorical variables were summarized using absolute and

relative frequencies. Numerical variables were described using the mean and standard deviation (SD) or the median and interquartile range (IQR), depending on distribution normality, which was assessed using the Shapiro-Wilk test.

Ethical considerations

This study used publicly available data sources; therefore, approval from a research ethics committee was not required.

RESULTS

Gastroenterologists

Among the 357 gastroenterologists evaluated, 64.2% were men, and the median age was 49 years (IQR: 39-63). Only 2% were registered as researchers in the RENACYT (Table 1). Regarding scientific productivity, 42.9% of gastroenterologists had published at least one scientific article during their academic career, and most of them had between one and two publications. Additionally, only 5.9% of gastroenterologists had published more than 10 articles (Figure 1).

The median h-index was 1 (IQR: 1-2). Overall, 59% of gastroenterologists had an h-index of 1 or 2 (Figure 2). Among gastroenterologists with high scientific output (>10 publications, n=21), 61.9% (n=14) had an h-index ≤ 5 , 28.6% (n=6) had an h-index between 6 and 10, and only 9.5% (n=2) had an h-index >10.

Table 1. Characteristics of gastroenterologists in Peru, 2025 (N=357).

Characteristics	n (%)
Sex	
Male	229 (64.2)
Female	128 (35.8)
Age, median (IQR)	49 (39-63)
Years of professional experience ^a (n=294)	
≤ 5 years	78 (26.5)
6 - 10 years	84 (28.6)
11 - 20 years	77 (26.2)
> 20 years	55 (18.7)
Recognized researcher in RENACYT	
No	350 (98.0)
Yes ^b	7 (2.0)
Has published at least one scientific article	153 (42.9)
Has published ≥1 article in the last 5 years (2020-2024)	73 (20.5)
Has published ≥1 article in the last 2 years (2023-2024)	39 (10.9)
Published ≥1 article before completing specialty training ^a (n=324)	56 (17.3)

^a Year of specialty completion was not available for all physicians.

^b Includes: 4 Level VII, 1 Level V, 1 Level IV, and 1 Distinguished Researcher. IQR: interquartile range.

RENACYT: Registro Nacional Científico, Tecnológico y de Innovación Tecnológica.

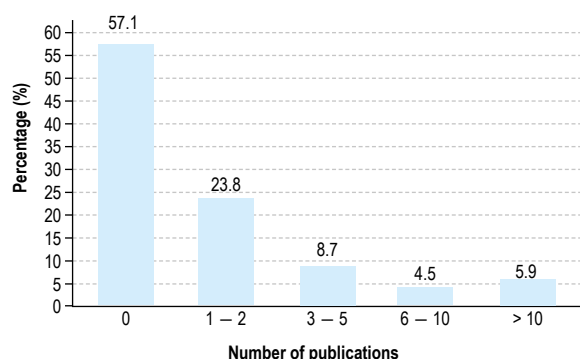


Figure 1. Distribution of gastroenterologists from Peru according to number of publications (n=357).

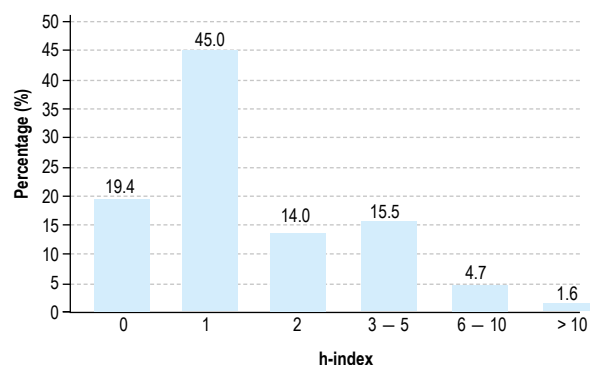


Figure 2. Distribution of gastroenterologists from Peru according to h-index (n=129). Only those with at least one publication indexed in Scopus were included.

Published articles

A total of 559 scientific articles were identified, of which 61.5% were published in Peruvian journals, most frequently in *Revista de Gastroenterología del Perú* (48.8% of all publications). Spanish was the predominant language

Table 2. Characteristics of scientific articles published by gastroenterologists from Peru, 2025 (N=559).

Characteristic	n (%)
Country of the publishing journal	
Peru	344 (61.5)
United States	58 (10.4)
United Kingdom	32 (5.7)
Spain	17 (3.0)
Cuba	16 (2.9)
Argentina	14 (2.5)
Germany	14 (2.5)
Other international journals	64 (11.4)
Article language	
Spanish	376 (67.3)
English	182 (32.6)
Italian	1 (0.2)
Year of publication	
< 2005	144 (25.8)
2005 - 2014	159 (28.4)
2015 - 2024	256 (45.8)
Type of scientific article	
Original article	317 (56.7)
Case report	169 (30.2)
Review article	46 (8.2)
Letter to the editor	27 (4.8)
Study design of original article (n=317)	
Descriptive	137 (43.2)
Analytical	163 (51.4)
Experimental	17 (5.4)
Included gastroenterologist was first author	206 (36.9)
Included gastroenterologist was corresponding author	199 (35.6)

(67.3%), and most articles were published within the last ten years (2015–2024). The most common article type was original articles (56.7%), predominantly with an analytical design (Table 2).

Overall, 29.7% of articles lacked quartile classification. Of all publications, 16.5% corresponded to articles published before the implementation of SJR quartile classifications, whereas 13.2% were published in journals that were not indexed in Scopus at the time of publication. Additionally, 53.9% of articles were published in Q3 or Q4 journals (Figure 3).

The median number of citations per article was 2 (IQR: 0–6). A total of 19.9% of articles had no citation information because they were not indexed in Scopus at the time of the search. Among Scopus-indexed articles (n=448), 28.1% had 0 citations, 27.9% had between 1 and 2 citations, 18.3% had between 3 and 5 citations, 12.5% had between 6 and 10 citations, and 13.2% had more than 10 citations

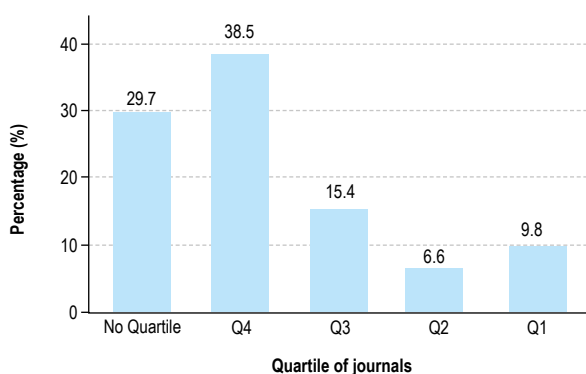


Figure 3. Quartile ranking of journals (according to Scimago Journal Rank) in which Peruvian gastroenterologists published (n=559). Quartile classification corresponds to the year of article publication. "No Quartile" includes articles not indexed in Scopus at the time of publication or published before the start of Scopus quartile classification (1999).

Table 3. Main research topics of original articles published by gastroenterologists from Peru (n=317).

Research topic	n (%)
<i>Helicobacter pylori</i> and gastric diseases	76 (24.0)
Hepatology	64 (20.2)
Diagnostic and therapeutic endoscopy	50 (15.8)
Non-gastroenterological topics	39 (12.3)
Intestinal pathology ^a	30 (9.5)
Pancreas and biliary tract	26 (8.2)
Other gastroenterology topics ^b	32 (10.1)

Original articles were defined as those including Introduction, Methods, Results, and Discussion (or equivalent sections)

^a Excludes inflammatory bowel disease.

^b Includes gastrointestinal bleeding, inflammatory bowel disease, pediatric gastroenterology, esophageal disorders, and miscellaneous topics.

per article. Among the most cited articles (>10 citations, n=59), English was the predominant language (88.1%, n=52), the most frequent design among original articles was analytical (62.7%, n=37), and only 10.2% (n=6) listed a Peruvian gastroenterologist as first author.

The main research topics of the original articles were *Helicobacter pylori* and gastric diseases, hepatology, and diagnostic and therapeutic endoscopy (Table 3).

DISCUSSION

In the field of gastroenterology, the United States, Japan, and China lead global scientific production, both in total number of publications and in randomized clinical trials ⁽¹⁶⁾. In Latin America, Brazil contributes the largest share of scientific output in medicine (64.3%), in contrast to Peru, which contributes less than 3% ⁽⁵⁾. Nevertheless, a modest but sustained increase in Peruvian scientific production has been documented over recent decades ^(5,6,17). This is consistent with our findings, which show that productivity among gastroenterologists remains limited (42.9% had published at least one scientific article), but with an upward trend compared with a 2009 survey reporting that only 32.4% of gastroenterologists had published at least one article ⁽⁸⁾. This trend becomes more evident considering that the mentioned survey was restricted to Lima, the most productive region in Peru ⁽⁶⁾, whereas our analysis used a randomized, nationally representative sample of gastroenterologists, including professionals from regions where non-publication rates reach up to 83% ⁽¹⁸⁾.

However, among gastroenterologists who had published, the number of publications per author was relatively low, suggesting that most appear to be occasional or sporadic researchers. These findings contrast with reports from academic gastroenterology faculty in the United States, where median publication counts of approximately 19 articles have been described ⁽¹⁹⁾, as well as with studies of Chilean digestive surgeons, in which nearly 77% had

at least one scientific publication ⁽²⁰⁾. Similarly, our results differ from those reported among physicians working in hospitals in Lima, where an average of seven articles per researcher has been reported ⁽²¹⁾. That estimate, however, is likely inflated by a small subgroup of highly productive authors, which may increase the overall mean.

This pattern of low research productivity is also observed in more academic sectors within the specialty. In a ten-year evaluation of abstracts presented at the congresses of the Sociedad de Gastroenterología del Perú, only 8.2% were subsequently published as full scientific articles ⁽²²⁾. Similarly, limited scientific productivity has been reported among thesis and research advisors in medical schools ^(11,12), and even among physicians holding master's and doctoral degrees ⁽²³⁾, suggesting that low research output is a cross-cutting problem affecting multiple academic levels in the country.

Another relevant finding was that a substantial proportion of publications corresponded to case reports (30.2%), which tend to receive fewer citations than analytical or experimental studies. Although case reports play an important role in the description of rare diseases, unusual clinical presentations, and novel therapeutic approaches, previous bibliometric analyses have shown that they frequently exhibit low citation rates and may contribute less to journal- and author-level bibliometric impact indicators ^(24,25). This pattern may partly explain the overall low citation counts observed in our study.

Additionally, in our analysis, only a minority of publications (36.9%) listed an included Peruvian gastroenterologist as first author, and this proportion was even lower (10.2%) among the most cited studies. First authorship is commonly considered an indicator of scientific leadership, as the first author typically leads the study and assumes primary responsibility for its execution ⁽²⁶⁾; therefore, these findings suggest limited leadership participation in both overall scientific production and higher-impact research.

In our study, the h-index was markedly low for most gastroenterologists, including those with relatively high scientific productivity. Likewise, the median number of citations per article was low, indicating limited visibility and impact of the published research. These findings contrast with reports from academic settings in the United States, where median h-index values of approximately 6-10 have been described among faculty in ophthalmology, otolaryngology, and gastroenterology ^(19,27,28). Similarly, a bibliometric study of Latin American digestive surgeons reported a median h-index of 2, which, although relatively low, remains higher than that observed in our study ⁽²⁰⁾. These differences may reflect multiple factors, including lower publication volume, limited international visibility, publication in lower-impact journals, and methodological quality of the published studies.

The low productivity and impact of scientific publications among Peruvian gastroenterologists likely

result from multiple factors. First, most hospitals and healthcare centers in the country lack well-established research units, limiting the infrastructure and logistical support required to conduct high-quality research. This is compounded by heavy clinical workloads and limited protected time for research, which discourages specialist participation in scientific activities. In addition, insufficient training in research methodology and scientific writing^(8,21), English-language barriers⁽²⁹⁾, and high rejection rates in international journals may further discourage submission to higher-impact journals, perpetuating a preference for local journals with lower visibility. In the present study, we did not assess methodological quality, risk of bias, or other design features of the included articles, factors that may also influence visibility and citation rates^(30,31). Future studies assessing these characteristics in leading Peruvian journals (where local gastroenterologists most frequently publish) would help clarify the determinants of low citation impact.

Although our results are unfavorable, they highlight the need for strategies to improve scientific productivity. The creation of research units or committees within hospital departments has shown positive results in other settings and could strengthen research output in gastroenterology⁽³²⁾. Structured mentorship programs have also been shown to increase both the number and quality of publications in academic and residency environments, particularly in Latin America⁽³²⁻³⁴⁾. Including mandatory courses in research methodology, study design, and scientific writing and publishing in gastroenterology residency curricula could further strengthen research competencies among future specialists^(29,32,34,35). These strategies could be complemented by academic and professional incentives, such as incorporating scientific productivity and impact (e.g., h-index) into promotion criteria^(23,36-38). However, such policies must prioritize quality over quantity, since poorly designed incentives may encourage practices that undermine scientific integrity, such as "paper mills" or low-rigor publications^(39,40). Continuous ethical and methodological oversight should therefore be an integral component of any scientific capacity-building program.

This study should be interpreted considering some limitations. First, some publications prior to 2000 may not have been identified due to limited digital archiving of local journals during that period, potentially underestimating productivity among older or more experienced gastroenterologists. Second, although the CMP maintains a continuously updated registry of specialists, some gastroenterologists included in the sampling frame may have been deceased at the time of article searching, which could have underestimated recent scientific productivity (e.g., publications within the last 2 or 5 years). Third, despite the use of manual verification procedures, the identification of authors may have been affected by homonyms, variations in name registration, or incomplete affiliation data, potentially leading to misclassification of publications. Fourth, classification of the main research topic of original articles was based on the authors'

judgment; because some articles addressed multiple topics, certain categories may be underrepresented. Fifth, citation counts, h-index calculations, and journal quartile classifications were based exclusively on a single database (Scopus). Although Scopus is a widely recognized and quality-controlled database with broad biomedical coverage, reliance on a single source may have resulted in missing citations or publications indexed exclusively in other databases, such as EMBASE or Web of Science. In addition, differences in indexing practices across databases may influence citation counts and bibliometric indicators.

The main strengths of this study include the use of an official national registry as the sampling frame and a random selection process, which support the representativeness of Peruvian gastroenterologists. In addition, the search strategy incorporated multiple biomedical databases and manual validation of author identities and publications, reducing the risk of misclassification due to homonyms or naming variations. Another strength was the manual aggregation of multiple Scopus author profiles and subsequent recalculation of the h-index, which allowed a more accurate estimation of bibliometric indicators. Finally, to our knowledge, this is the first nationwide bibliometric study evaluating scientific productivity among gastroenterologists in Peru.

In conclusion, fewer than half of Peruvian gastroenterologists have published at least one scientific article and, among those who did, most show low scientific productivity. Academic impact, measured by the h-index, was low in the vast majority of cases, even among those with higher publication counts. Publications were concentrated mainly in local journals and lower quartiles (Q3-Q4), with a low number of citations per article.

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