







A bibliometric analysis of 47-years of research on public health in Peru

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ABSTRACT

Objectives: To measure Peruvian scientific production on public health in Scopus database.

Methods: Bibliometric study using advanced Scopus web search engine (<https://www.scopus.com/search/form.uri?display=advanced>). The inclusion criteria were the publications of articles related to public health between 1973 and 2020. The equation was used as a strategy: TITLE-ABS-CLAVE (“public health”) AND AFFILCOUNTRY (Peru) AND (EXCLUDE (PUBYEAR, 2021) OR EXCLUDE (PUBYEAR, 2020)). SCImago journal & country rank was used to determine the impact factor (h-index) and the quartile of the journals identified. The analysis included in SPSS v24.0 included years of publication, institutions, h-index, list of authors with the most publications, publication types, and journals.

Results: 903 articles published by 7.5±12.5 authors were included, showing that 74.5% were original articles written mainly in English (77.7%). The publications for the year 1973 and 2019 were 3 (0.3%) and 98 (10.9%), respectively. In addition, it was shown that the most productive institutions were the Universidad Peruana Cayetano Heredia (42.9%) and the Universidad Nacional Mayor de San Marcos (13.1%). The journal with the highest number of Peruvian publications was Revista Peruana de Medicina Experimental y Salud Pública (RPMESP) [Peruvian Journal of Experimental Medicine and Public Health (PJEMPH)] (17.5%) and PLoS ONE (2.88%).

Conclusions: The present study showed in the magazines with the highest number of citations and therefore greater visualization, where Peruvian publications in this area were published, with this the future readers can take these magazines into consideration so that their publications have a greater visualization. In addition to this, the study shows the largest institutions that have a great impact on Peruvian publications in public health in Scopus, this invites researchers to analyze the research methodologies that these institutions follow in order to disclose them for reproduction in new entities interested in research.

Keywords: public health, Peru, Peruvian research, bibliometric, Scopus

INTRODUCTION

The process of research and dissemination of scientific knowledge is crucial for the strengthening, development, and advancement of scientific disciplines, especially those that are nourished by the integration of several specialties, as is the case of public health, where its foundations and competencies are not governed by mere intuition or empiricism in itself, but, on the contrary, arise from a methodological and conceptually sound framework [1, 2].

Public health research is the most direct and truthful form of communication about the development of a country and is of great help in the case of developing countries, since in these, decision-making in public health is strongly influenced by empirical thoughts and assumptions made by politicians about the state of the population [3]. In view of this, evidence

obtained through the scientific method represents the best way to promote decision-making in accordance with the reality of a population [1-5].

In addition to being a source of information for decision-making in health affairs, public health has two of its basic functions (mainly the second and tenth functions) aimed at research. In this sense, the second function is directed towards surveillance, research and control of risks and damages in public health, and here we find research in epidemiology. On the other hand, the tenth function deals with essential research for the development and implementation of public health solutions; this function represents in its entirety the development, implementation, and strategies of research in the area of public health.

In Latin American countries, the market had a great influence on the way public health research was conducted,

since it was seen as a commodity [2]. Thus, conflicts of interest represent one of the greatest challenges faced by research, which, in the case of public health, are related to various economic-political factors, largely generated by corporations associated with health [6]. This situation caused Latin American public health research to not develop in an optimal way, showing mostly epidemiological studies focused on clinical trials led by pharmaceutical companies [1-4].

Epidemiological studies are carried out under a classical approach to epidemiology, as they observe and analyze health problems limiting themselves to the quantification of cases, leaving aside what is behind those numbers and statistical parameters [2, 7]. Despite this classical epidemiology, a movement emerged in Latin America, where research groups incorporated political economy as the focus of their studies, also addressing environmental issues as a negative factor towards human health. This movement, which emerged in the 1970's, follows a current of critical thinking, questioning classical epidemiology [2].

The importance of research in public health and the interest of countries in the development of policies in this regard [8, 9] makes us wonder about the bibliometric growth of research in public health, especially that carried out by Peruvian researchers, since we consider that knowing public health developed by each country can shed light on the quality of government policies and, in short, on the quality of life of the inhabitants, reflected in the interest and progress of research on reality.

For the aforementioned reasons, in order to make known Peruvian scientific production on public health, here we analyze all Peruvian scientific production on public health available in Scopus database, with a view to examine the temporal evolution, demonstrate the nucleus of authors and institutions most productive in the subject, in addition to making known the most relevant journals and the number of citations received.

With this, we seek to identify the central points of Peruvian research, as well as to alert researchers and future researchers, about search strategies, collaborations and journals that attribute better research, and greater results in the implementation and correction of public health policies.

We aimed to measure Peruvian scientific production on public health in Scopus database. This bibliometric analysis is carried out with the intention of suggesting and guiding subsequent lines of research in the fields of analysis of the study [10-14].

MATERIALS AND METHODS

Study Design

We conducted a web-based bibliometric study using Scopus database (Elsevier, available at <http://www.scopus.com>) in which the presence, productivity, and influence of Peruvian authors and research on public health topics were analyzed. In addition, using the data from this database, the impact and use in social and scientific platforms was measured through bibliometric indicators.

Selection Criteria and Search Equation

The inclusion criteria were documents on subjects related to public health between 1973 and 2020 and with at least one

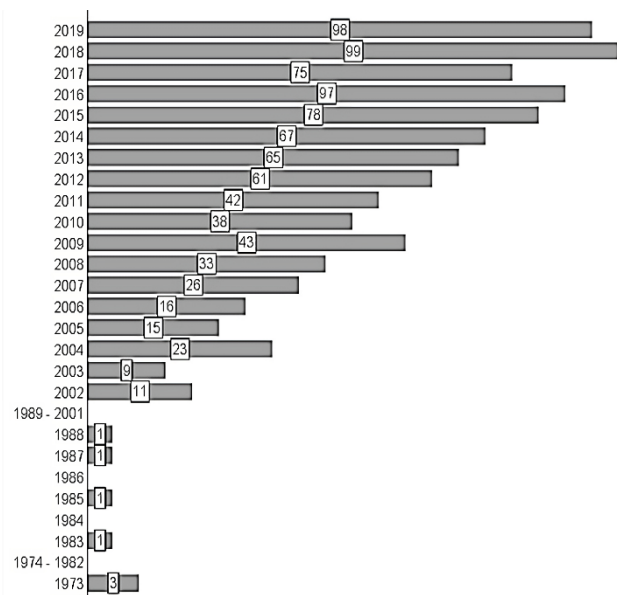


Figure 1. Annual Peruvian scientific production in public health between 1973 & 2019 (n=903) (Source: Scopus)

Peruvian author or with affiliation to this country institution. The 2020-2021 documents were excluded due to increased research during the COVID-19 pandemic. We chose to use Scopus database due to the large number of journals in its collection. Scopus represents the largest database of scientific literature, covering about 50% of the journals in the Ulrich's directory, and 100% of the journals in Medline, being the most important database in biomedical sciences [13-16].

The search was performed on October 20, 2020, and the strategy used was the use of the word "public health" in the fields article title, abstracts, keywords, and the word "Peru" in the field affiliation. The search equation was TITLE-ABS-KEY ("public health") AND AFFILCOUNTRY (peru) AND (EXCLUDE (PUBYEAR, 2021) OR EXCLUDE (PUBYEAR, 2020)). Titles in English and Spanish were searched within the database.

Selection, Initial Analysis, and Variables

Scopus made it possible to obtain information on 980 articles in the preliminary search. After eliminating duplicates, a manual review was performed to eliminate false records and selection errors that the database may have had when presenting the data. To visualize the journals, where the researchers publish, the impact factor (h-index) and the quartile of the identified journals (identified from Q1 to Q4) were obtained using the SCImago journal & country rank platform (<https://www.scimagojr.com>). The study review protocol is shown in **Figure 1**.

After analyzing the articles and selecting them, a list was constructed in MS-Excel 2010 (Redmond, WA, US) with the following variables: year of publication, authors, journals, type of publication (i.e., reviews), citations received, institutions (public, private, non-profit non-governmental organizations), countries (for collaborative studies with Peru) and affiliation of the corresponding author.

Data Analysis

The statistical software for data analysis was SPSS v24.0 (Armonk, NY, US), where a descriptive analysis was carried out with the calculation of means, standard deviations and distribution of simple and absolute frequencies of the studies

on public health included in the study. Subgroup analyses were performed according to years of publication, list of authors with the most publications, types of publication and journals, h-index, and institutions. VOSviewer version 1.6.18 (Leiden University's Center for Science and Technology Studies, The Netherlands) was used for the analysis and visualization of co-occurrence networks of collaboration terms between countries and institutions.

RESULTS

Peruvian scientific production under the subject of public health in journals indexed to Scopus is composed of 903 scientific articles. Of these, it was found that three (0.3%) publications were the first on public health carried out in 1973. These articles were entitled “La Influencia de la altura sobre el hombre [The influence of height on man]” (Spanish title), “Possibilities of medical work in the highlands of Peru”, and “Quimioterapia de la tuberculosis. Progresos recientes aplicables a los programas de salud pública [Tuberculosis chemotherapy. Recent progress applicable to public health programs] (Spanish title)”. These studies were conducted by Universidad Peruana Cayetano Heredia (UPCH) [Peruvian University Cayetano Heredia (PUCH)], Centro de Salud Sandia Puno [Sandia Puno Health Center], and Pan American Health Organization, respectively. Likewise, they were published in Pan American Sanitary Bureau Bulletin, Praxis, and Actualidad Médica [Medical News], respectively.

Peruvian scientific production was scarce during the period 1983-2001, increasing from 2002 onwards, maintaining a stable rate of production, with 5 or more publications per year. On the other hand, the years 2016, 2018 and 2019 represent the years with the highest Peruvian production in the subject of public health in Scopus, with 97 (10.3%), 99 (11%) and 98 (10.9%) articles published, respectively in each year. The complete scientific production on public health is shown in **Figure 1**.

From a total of 903 articles (**Table 1**), it was found that a large part of these publications, 673 (74.5%), were published as original articles, the second modality was review articles (n=120, 13.3%). On the other hand, 462 publications (51.2%) had a researcher affiliated with a Peruvian institution as correspondent author. In terms of language, 702 (77.7%) documents were published in English and 197 (21.8%) in Spanish. From the perspective of authorship, there was a predominance of international multiple authorship (65.3%), that is, collaboration between researchers worldwide, as opposed to authorship by Peruvian researchers in their entirety (34.7%). Regarding authorship, from a total of 6,774 signatures identified in the study, 1,033 correspond to studies by Peruvian authors in their entirety, including studies signed by up to 23 authors. It is important to mention the finding of only 88 papers signed by a single author (9.7%), showing the prevalence of teamwork; however, there is evidence of documents signed by 110, 148 and even 248 authors. The first article mentioned, with 110 authors, was published by “The MAL-ED Network Investigators”, in 2014, in the journal “Clinical Infectious Diseases”, has a total of 183 citations, was published under the modality of original article in English language, in addition, it was observed that Peruvian institution involved in the realization of the paper was “Association beneficial projects in informatics, health, medicine and agriculture (AB PRISMA)”. The article with 148 authors was published by “World Health

Table 1. General characteristics of scientific production

Variable	Description
Type of publication	
Original article	673 (74.5%)
Review	120 (13.3%)
Book chapter	10 (1.1%)
Conference paper	23 (2.5%)
Editorial	20 (2.2%)
Letter to the editor	39 (4.3%)
Notes	14 (1.6%)
Short survey	4 (0.4%)
Country of the correspondent author	
Peru	462 (51.2%)
Others	441 (48.7%)
Language	
English	702 (77.7%)
Spanish	197 (21.8%)
Portuguese	4 (0.4%)
Collaboration between countries	
Peru only authors	313 (34.7%)
Peruvian & foreign authors	590 (65.3%)
Authors involved	
One author	88 (9.7%)
Two authors	98 (10.9%)
Three authors	119 (13.2%)
Four authors	89 (9.9%)
Five authors	99 (11.0%)
Six authors	68 (7.5%)
More than seven authors (7-248)	342 (37.9%)
Authors involved	
Mean±SD (Range: Min-max)	7.5±12.45 (1-248)

Organization maximizing positive synergies collaborative group”, in 2009, in the journal “The Lancet”, had a total of 354 citations, was published under the “notes” modality in English. In addition to this, it was pointed out that the institution involved in this work was Cayetano Heredia Private University. The last article mentioned in this section, with 248 authors, was published by “ISAAC phase three study group”, in 2009, in the journal “Journal of Allergy and Clinical Immunology”, has a total of 432 citations, was published under the modality of original article in English language, in addition to this, it was observed that in the article only the author's affiliation appears as “Lima, Peru”.

17 authors from Peru (14/17 were male) were identified as the most productive authors with more than 10 publications on public health topics in Scopus. Most productive authors come from UPCH (six first places in productivity), of these authors, Robert Hugh Gilman stands out, with 53 registered publications, and Juan Jaime Miranda, with a record of 33 publications (**Table 2**).

The most productive Peruvian institution in public health in Scopus is UPCH with 387 (42.9%) documents (**Table 3**). Next in order of productivity are Universidad Nacional Mayor de San Marcos (UNMSM) [National University of San Marcos (NUSM)] and Instituto Nacional de Salud del Perú (INS) [National Health of Peru (NHP)] with 118 (13.1%) and 99 (11%) published documents, respectively.

Table 2. Authors with Peruvian affiliation with more than 10 articles published in public health area

Author	NoP	Institutional affiliation	HI
Gilman RH	53	UPCH, PRISMA, INCN, & CRONICAS	84
Miranda JJ	33	UPCH & CRONICAS	40
Gotuzzo-Herencia E	25	UPCH	57
García HH	16	INCN & UPCH	48
García PJ	15	UPCH	30
Checkley W	14	UPCH & CRONICAS	45
Lanata CF	14	IIN	45
Lescano AG	14	NAMRU-6 & UPCH	31
Huicho L	13	UPCH	27
Mendoza W	13	Peru Country Office	50
Cabrera LZ	12	PRISMA	39
Carrillo-Larco RM	12	UPCH, CRONICAS, & ULADECH	13
Sánchez JL	12	IMPACTA Perú, UNMSM, & CITBM	38
Cáceres CF	11	UPCH	33
Gamboa D	11	UPCH	24
Hernández Vásquez AA	11	USIL, CRONICAS, & UPCH,	6
Segura ER	11	UPC	17

Note. NoP: Number of publications & HI: h-index

Table 3. Most productive Peruvian institutions in public health area in Scopus

Institution	F	L
Universidad Peruana Cayetano Heredia	387	Lima
Universidad Nacional Mayor de San Marcos	118	Lima
Instituto Nacional de Salud	99	Lima
Naval Medical Research Unit No. 6	75	Lima
Ministerio de Salud [Ministry of Health]	68	Lima
Universidad Peruana de Ciencias Aplicadas (UPC)	53	Lima
Asociación Benéfica Proyectos en Informática, Salud, Medicina y Agricultura (AB PRISMA)	37	Lima
Instituto de Investigación Nutricional	24	Lima
Universidad de San Martín de Porres	21	Lima
Socios En Salud Sucursal Perú	20	Lima

Note. F: Frequency & L: Location

These institutions form, together with UPCH, the core of the most productive Peruvian institutions in the area of public health in Scopus. In general, the list of Peruvian institutions with 20 or more publications in public health in Scopus is made up of four universities, three research centers, two public organizations, and one health care center.

Peruvian scientific production on public health in Scopus is published in 154 journals. On the other hand, 158 (17.5%) documents are found in Revista Peruana de Medicina Experimental y Salud Pública (RPMESP) [Peruvian Journal of Experimental Medicine and Public Health (PJEMPH)], being this the journal, where we found the largest number of publications by researchers with Peruvian affiliation in Scopus, which,

together with the journal Investigaciones Veterinarias del Perú [Veterinary Research of Peru], are among the 10 journals with the most Peruvian publications in public health in Scopus (Table 4).

Of the 903 Peruvian publications found in public health in Scopus, the first 15 publications with the highest number of citations were chosen, of which it was found that Peruvian publication with the highest number of citations had 2304 citations, it was published in The Lancet under the modality of review article. The second place is occupied by a publication with 855 citations, published in the journal "Trends in Ecology and Evolution" under review article modality. And the third place had 707 citations, was published in The Lancet and was also published under review article modality. It is evident that of the 15 publications shown, seven (46.6%) were published in "The Lancet", two (13.3%) in "American Journal of Public Health", and the other journals were only named once (6.6%) in this top 15 publications with the highest number of citations. It can be seen that 14 (93.3%) of the 15 publications have a percentile greater than 90 and only one (6.6%) has a percentile 73, which was the publication with the lowest number of citations in the current top. (Table 5).

Researchers belonging to foreign institutions from 160 countries participated as collaborating authors in the papers (Figure 2).

Among them, the United States stands out in the collaboration with Peruvian researchers in 406 (45%) articles. It is also important to note the collaboration of the United Kingdom, Brazil, Colombia, Spain, Argentina, Canada, Mexico, and Chile, in which collaboration was found in more than 50 articles. In relation to the United States, the institution that presented the most collaborations was the National Institute of Allergy and Infectious Diseases, which collaborated with Peruvian researchers in 79 (8.7%) publications. It is also worth mentioning the Fogarty International Center, an institute of the same country, present in 73 (8.1%) publications.

In the bibliometric map of cooccurrence in keywords, 6,312 terms were extracted; the size of the labels representing each term was proportional to the frequency of occurrences and their weight. All the terms that had a connection were selected for the map, ending up with a total of 6,294 terms, and a total of 466,061 relationships between them. It can be seen that the cluster located in the center of the map, corresponding to circles and larger letters, indicates a high concurrence of those terms, as well as a high interrelation between them; on the contrary, those terms located at the edges of the map indicate a lower interrelation.

Table 4. Journals with largest number of Peruvian publications in public health

Scientific journal	NoP	Country	JCY	P	SJR (2019)
Revista Peruana de Medicina Experimental y Salud Pública	158 (17.5%)	Peru	1942	26	0.268
PLoS ONE	26 (2.88%)	United States	2006	91	1.023
PLoS Neglected Tropical Diseases	22 (2.44%)	United States	2007	95	2.148
Revista Panamericana de Salud Pública/Pan American Journal of Public Health	21 (2.33%)	United States	1997	42	0.41
The Lancet	20 (2.21%)	United Kingdom	1823	99	14.554
American Journal of Tropical Medicine and Hygiene	19 (2.1%)	United States	1945	67	1.182
BMC Public Health	17 (1.88%)	United Kingdom	2001	79	1.198
Revista de Investigaciones Veterinarias del Perú	15 (1.66%)	Peru	1999	21	0.192
Tropical Medicine and International Health	10 (1.11%)	United Kingdom	1996	89	1.256
American Journal of Public Health	8 (0.89%)	United States	1911	97	2.21

Note. NoP: Number of publications; JCY: Journal creation year; & P: Percentile

Table 5. Journals of the articles with the highest number of citations of Peruvian publications in public health

Scientific Journal	Number of citations	Type of publication	Percentile
The Lancet	2304	Review	99
Trends in Ecology and Evolution	855	Review	99
The Lancet	707	Review	99
Journal of Allergy and Clinical Immunology	432	Original article	94
The Lancet	420	Original article	99
European Respiratory Journal	410	Original article	95
mBio	389	Original article	90
American Journal of Public Health	358	Review	97
The Lancet	354	Note	99
Circulation	340	Review	99
American Journal of Public Health	312	Review	94
The Lancet	302	Review	99
The Lancet	273	Original article	99
The Lancet	262	Review	99
Global Public Health	228	Original article	73

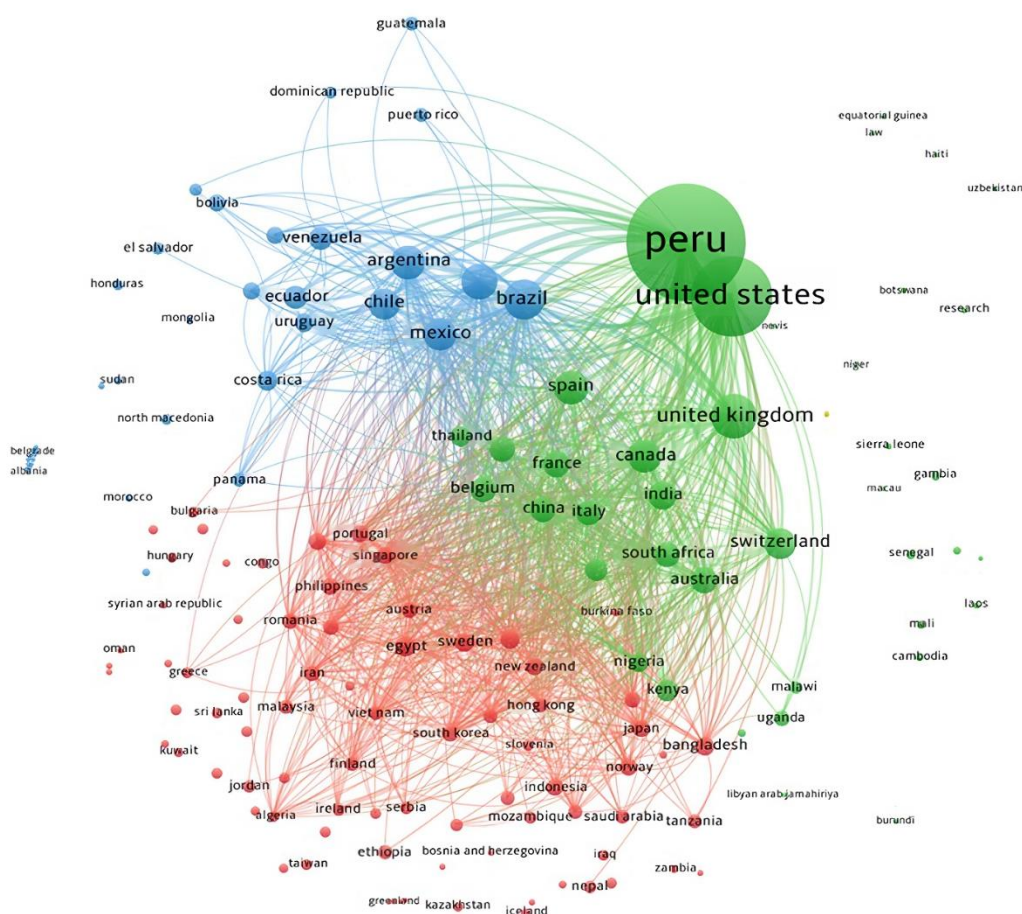
**Figure 2.** International collaboration identified in Peruvian scientific production on public health in Scopus (Source: Scopus)

Figure 3 shows that the most used terms are “human”, “humans”, “articles”, “peru”, “female”, “male”, “public health” and “prevalence”.

DISCUSSION

In this study, the bibliometric analysis of publications shows the presence of Peruvian research since 1973 in Scopus, showing a growing activity and gaps of about 20 of the 47 years of the study. In addition, there is a preponderance of scientific production in UPCH, both 239 as collaborative entities and in original publications.

Between 1973 to 2001 scientific publications on public health in Peru were quite scarce, showing that during those 28 years, only seven documents were published in Scopus. On the other hand, a growth trend can be seen from the year 2002, where it can be seen in a general way that Peru increases the number of publications on public health in journals indexed in Scopus [17].

Undoubtedly, the confinement due to COVID-19 could have affected this production, by which we refer to the evident increase in scientific publications during 2020, where these were promoted and facilitated by the context of the pandemic and the multiple calls and facilities granted. by journals during this period [18-20].

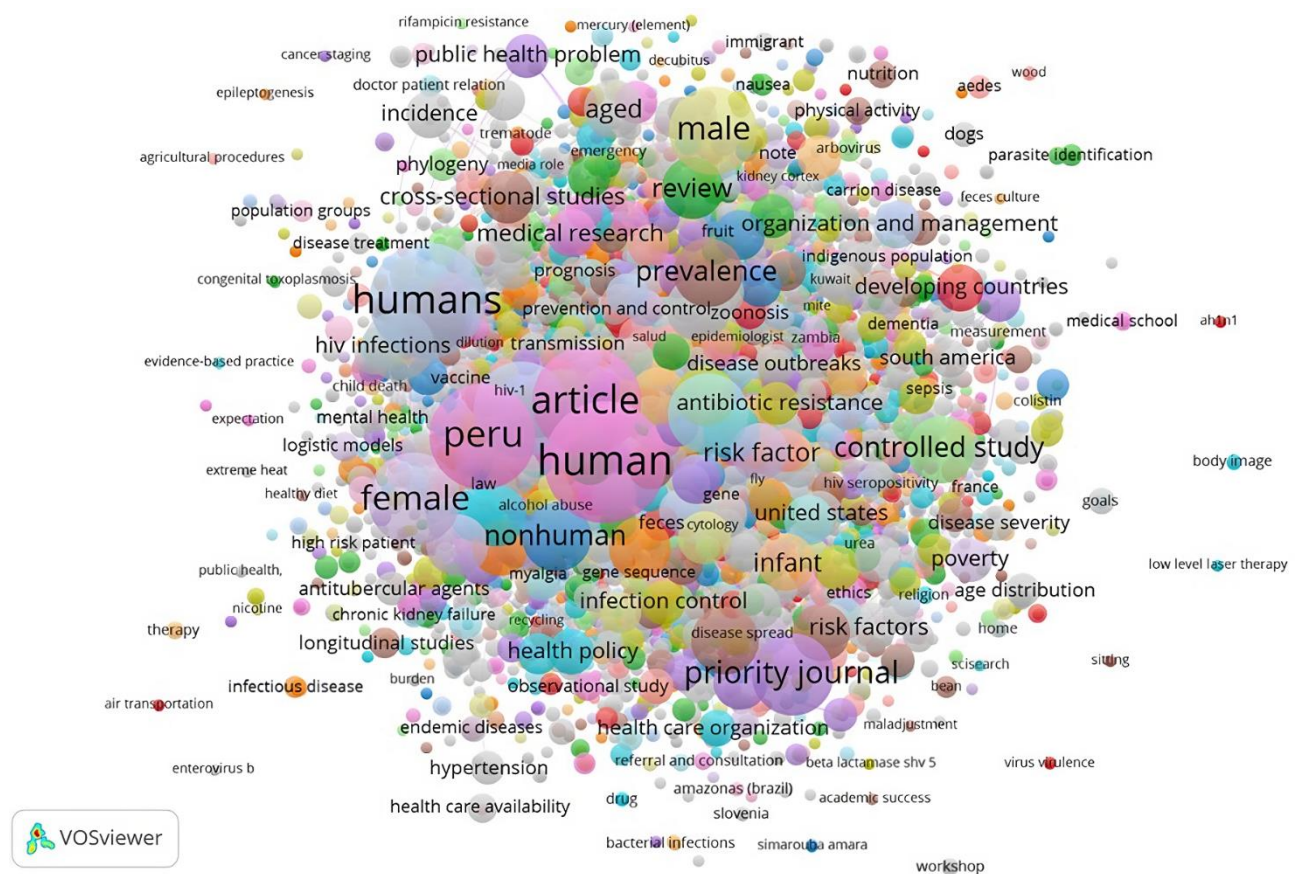


Figure 3. Main relationships of co-occurrence of keywords in publications that compose Peruvian scientific production on public health in Scopus (Source: Scopus)

In relation to the aforementioned, it can be expected that the current state of scientific publications in the area of public health has increased, since in the context of the emergency caused by COVID 19, during the years 2020 and 2021, the magazines made extraordinary calls in relation to this virus in different areas, one of these areas being public health [20]. The main challenge presented by the evolution of Peruvian scientific research is the small budget allocated to scientific development by Peruvian government, this is reflected in the current state of the quantity and quality of research carried out by Peruvian researchers, added To this we must mention the inclination of the universities to follow a training with a model of the classic Spanish university, where they focus mainly on teaching through letters, and not on research, which leads to scientific and technological development [21, 22].

However, this problem is not only Peruvian, but it is at the level of a large part of Latin America, the universities follow this model [21, 22]. However, as mentioned, the main challenge presented by Peruvian research is the low investment that the state allocates to research, it is known that for 2019, the budget allocated to the research area reached 0.12% of product internal gross; however, only 0.08% of this allocated budget is spent [21, 22]. This budget is mainly intended for the administration of the institutions in charge of this area, but not for the incentive and improvement of scientific research and technological development. It is known that for a country to have optimal development in the area of research and achieve a growing economy, investment in research should exceed 0.7%, which, as mentioned above, is not being met [21, 22]. On the other hand, the research shows a preference of authors to publish original articles.

Particularly noteworthy is the linguistic factor, where the preeminence of English is observed, a common language in the main databases and the most widely used language in terms of value in the media and social networks [13, 23, 24]. However, it has been shown that there are limitations in the use of English among students and teachers of health sciences, which is a limitation in scientific production, which to some extent may also be a factor that reduces the increase in scientific production [25]. More studies are needed to understand the effects of language on scientific production in Scopus as well as the resources and funding of scientific projects that end up in publication [26]. Our results also show international scientific collaboration, where there are usually formal collaborations in which the institutions or countries sign agreements highlighting the benefits and responsibilities of the study in question; at the same time, there are also informal collaborations, where the scientists involved share all or part of the information, as well as the materials and training necessary to carry out the study [13, 14, 16]. On the other hand, we observed the predilection of the authors to publish together with other authors, since only 9.7% of the publications were signed by a single author. However, the tendency to increase the number of authors may be due to the complexity and interdisciplinarity required in an area as broad as public health [1-7]. We also observed publications with more than 100 authors, reaching 248 authors in one case. Although this high number of authors included in a single study is very striking, it is likely that these studies have been carried out by research groups, which have a large number of research personnel in different subject areas [14].

Most of the most productive authors come from UPCH, founded in 1961. Among the most outstanding authors from this institution are Robert Hugh Gilman, Juan Jaime Miranda, Eduardo Gotuzzo, Héctor Hugo García and Patricia J García. The new educational reform policies and the growing interest of university authorities in research have led these institutions to seek the development of research and its subsequent publication by their students, thus leading to a large increase in their publication rate [27, 28]. This coincides with our findings, where the first two positions of the most productive institutions in public health in Scopus are UPCH and UNMSM, two of the three universities with the highest international positions [29]. Another bibliometric study of the journal entitled “Revista Peruana de Medicina Experimental y Salud Pública (RPMESP) [Peruvian Journal of Experimental Medicine and Public Health (PJEMPH)]”, has shown that between years 2010-2017 both universities have led national publication [30].

Our findings suggest that this journal has also been ranked as the journal with the highest national production and the results of a previous study support these findings [30]. However, only 2.21% of the evaluated papers have been published in a high impact journal such as “The Lancet”, which, besides being a quartile 1 journal, presents an SJR of 14.554. This unevenness of publications (**Table 4**) in Revista Peruana de Medicina Experimental y Salud Pública (RPMESP) [Peruvian Journal of Experimental Medicine and Public Health (PJEMPH)] highlights the discrete quality and visibility of Peruvian scientific research in this area, since despite the large number of publications in this journal, there is a preference of Peruvian researchers to publish in foreign journals (mainly in the United States and the United Kingdom).

The first map showed and reaffirmed the preference for collaborative research, leaving the United States and the United Kingdom as the main collaborators of research in public health, both countries that present a high index of scientific publications, and contributions with other foreign entities. This can be contrasted with a study that mentions Brazil, Mexico, Colombia and Argentina as the countries with the greatest capacity to communicate scientific results in public health, while, on the other hand, the same study lists Peru as one of the Latin American countries with the greatest visibility and high rates of collaboration [31]. Finally, the second map identified that there is a tendency to study topics such as prevalence, risk factors, public health problems, antibiotic resistance and HIV infections. These results differ from the global topics most addressed in public health research, where it is evident that the subject matter is inclined towards psychosocial and mental health issues, in addition to research on infectious diseases, health systems and policies, reproductive and maternal health, and noncommunicable diseases [32].

This study is not the only one that shows the reality of Peru in the area of public health, another study that analyzed the same area in the Scielo database, during the years 2001 to 2016, shows that Peru only had a participation of 3.55 % of all Scielo public health publications in South America, this suggests that the scarcity of publications is not only in a more rigorous database such as Scopus, but also that this already represents a deficiency in Peruvian research. [33] A similar case occurs in another article, where public health research is analyzed in the Pan American Journal of Public Health from 1997 to 2012, here it can be seen that Peru only published 30 articles, this journal is taken as a reference scientific publication in the area of public health in the Americas [34].

This study can be used as a point of reference for future evaluations and comparisons with future years in Peruvian publications of the public health area of Scopus. In addition, the results shown are useful since they show readers and potential researchers the journals with the highest number of visits, the main Peruvian authors with the highest number of publications, which can be the subject of interviews, or considered as guides. to follow a path in a more enriched investigation. In addition to the above, Peruvian institutions with the greatest presence in public health publications in Scopus can be considered, being the subject of future study in order to analyse the reasons why it is one of the leading research institutions in Peru. Similar to an investigation, where the original scientific publications of the National Institute of Health were analyzed during the years 1998 to 2018, this analysis carried out in this investigation is a clear example of how the trajectory can be visualized to analyze an institution seeking to adapt or improve its research methodology to new institutions in order to improve the index of publications of an entity [35].

Limitations

First, a bibliometric analysis has been performed and the impact of Peruvian authors has been found; however, the impact (h-index) of the published articles, understood as the number of citations, has not been estimated. Second, the quality of the studies found has not been evaluated in terms of compliance with publication standards (i.e., STROBE guidelines) and access to the documents. Third, an economic analysis of the financing and patricians of the papers has not been performed. Despite these limitations, this is the first Peruvian bibliometric study on public health research.

The present bibliometric study did not carry out the disambiguation of authors, so the total number of publications of the mentioned authors may be higher than that shown in our results. This study does not have the support of a legal issue, so it does not touch the political issue, only a descriptive bibliometric issue is evaluated in order to give the necessary guidelines to improve the quality of Peruvian publications in the area of public health. In a future study, a more political focus can be given, to see the evolution of investment in research and the growth of Peruvian research and, if possible, also evaluate the scientific research proposals of the candidates for Peruvian elections.

It is necessary to deepen the development of topics related to public health in public and private institutions of higher education, as well as in hospitals and institutes to avoid having gaps in scientific production, thus continuing the development of this field of health. In addition, further bibliometric research is required in order to know the impact of these scientific papers in other databases, including local and national grey literature, and the effects of COVID-19 on the scientific production in regional public health.

CONCLUSIONS

This bibliometric analysis reveals as a starting point the reality of Peruvian scientific research in the area of public health in Scopus, marking a point of reference to carry out the same analysis between three to five years in the future with the purpose of seeing the growth of Peruvian scientific research in this area. This analysis also serves as an incentive for new

research, since we show the institutions with the highest number of scientific publications in the area of public health in Scopus, this can serve as a reason to investigate the methodology that these institutions follow in order to reproduce these methods. of research in other Peruvian institutions or outside of Peru with it, seeking to increase its scientific production, in addition to serving as a reference institution for future collaborations in international studies. This article contributes by showing the journals, where Peruvian research in public health obtained the highest number of citations and therefore visits, thus helping future authors to correctly choose the journals in which to publish their research in order to obtain greater visibility.

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