



EXPLORING ANDALUSIAN SCIENTIFIC OUTPUT IN SOCIAL WORK: A WEB OF SCIENCE ANALYSIS

ALFONSO CHAVES-MONTERO ¹

¹ Department of Sociology, Social Work and Public Health, Faculty of Social Work.
COIDESO Research Centre: Contemporary Thought and Innovation for Social Development.
University of Huelva, Spain. ORCID: [0000-0001-5861-3414](https://orcid.org/0000-0001-5861-3414)

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ABSTRACT

The scientific research on social work is gaining importance in higher education. Although the incorporation of this discipline into academic research may have been delayed, it remains equally significant. Our aim in this article is to explore and analyze the current bibliographic production in the field of social education in Andalusia, mainly using the Web of Science database. The main objective of this research is to perform a bibliometric analysis of this area of knowledge, examine the indicators related to social work, and identify the strengths and weaknesses of this specific discipline.

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1. Introduction

Social work is a field in which research has been carried out for a short time, both nationally and internationally, so it is necessary to improve the research culture to make it more effective (Beddoe, 2011). The lack of research is due to several common characteristics at a global level, however, in Spain, especially in Andalusia, there were some historical peculiarities that have delayed the progress of research.

After the establishment of the Second Republic in Spain, the first school offering Social Work classes was founded in Barcelona in 1932 (Barenys y Jutglar, 1976; Estruch & Güell, 1976; Sarasa, 1993). However, its operation was interrupted during the Spanish Civil War and restarted after the war. The profession of Social Work was aimed at religious education and was completely unknown at that time because it did not exist as such (Sarasa, 1993). The Ministry of Education and Science did not officially recognise the profession until 1964.

Currently, there is little research and scientific publications on Social Work throughout Spain, including Andalusia, and they have only become relevant in recent years. Although this change is mainly occurring in the academic field due to the demands of university promotion, it is also occurring in the professional field due to the creation of research strategies in the new social services laws, such as Law 9/2016 on Social Services in Andalusia.

In the explanatory memorandum of this law, the importance of the global strategy of quality, efficiency and sustainability in the planning of the strategies, resources, services and benefits of social services to be carried out by the Regional Ministry is highlighted. Article 88 establishes the creation of the Andalusian Social Policy Research Network, with the aim of promoting research and innovation in the field of social policies.

Social work research has been present throughout history on a global level. Mary E. Richmond published *Social Diagnosis* in 1907, establishing for the first time a theory of social work based on research and experience. As Richmond already pointed out in her book, social work cannot be done without social research. Although social work has been criticised for its inability to establish a solid knowledge base for its work (Osmond, 2005; Osmond & O'Connor, 2004; Trevithick, 2008; Winston LeCroy, 2010).

The second major transformation of Social Work took place with the development of the European Higher Education Area (EHEA). This process of adaptation of qualifications throughout the European Union has had a major impact on all university studies in Spain. The former denomination of 3-year Diplomatura and 5-year Licenciaturas is transformed into years are transformed into 4-year degree courses. This transformation that Social Work from a Diploma to a Bachelor's Degree is an academic revolution, since this academic revolution, as this transformation of Social Work from a Diploma to a Bachelor's degree allows access to postgraduate studies at the same level as other degrees. access to postgraduate studies through master's degrees and doctorates. See the full incorporation of Social Work into university degrees and social sciences is and social sciences.

The aim of an area of knowledge is to increase its number of research projects and to make it more robust, so it is necessary for researchers in this area to know the steps for transferring scientific production (Rosenberg et al., 2005). A fundamental characteristic of a profession is the body of knowledge that defines it (Randall & Kindiak, 2008). Social work is a relatively new field of research because of the problems mentioned above, both internationally and nationally (Beddoe, 2011). The publication of articles in scientific journals is one of the basic means for the dissemination of scientific knowledge and the basis of the procedure for assessing the quality of scientific results in a scientific area (Sellers et al., 2006). Journals also incorporate peer review mechanisms to preserve the quality of publications.

Therefore, in scientific publication we will be faced with four differentiated and delimited phases. First: Generating knowledge through research processes. This generation can be obtained either through projects designed for this purpose or through the evaluation of professional practice.

Second: Drafting of the scientific work, normally articles, and subsequent publication in the journals after peer review and under the specifications and requirements established by the journal in terms of standards, ethics, etc.

Third: Dissemination of the published work so that it is known by all colleagues and cited in their publications.

Fourth: Evaluation of the knowledge generated through bibliometrics.

This fourth phase is of utmost importance to evaluate the author, the journal, the area of knowledge, and the university or organisation that publishes. This evaluation will be carried out through various indicators that we will explain below.

Bibliometric studies can be classified into two types (Noyons et al., 1999; Van Rann, 2004):

First: Performance bibliometric studies, which will be based on quantitative indicators such as the number of publications, or impact indicators that will be constructed based on the analysis of citations that publications have obtained (Garfield, 1972). The importance of a publication will be based on the citations received by other researchers, these being an indirect recognition of the research work.

Secondly, bibliometric content studies based on science maps created by co-occurrence of terms (Callon et al., 1983). These will reveal the conceptual structure of scientific disciplines and analyse their conceptual development (Cobo et al., 2012; Noyons et al., 1999).

On the other hand, bibliometric indicators can be divided into three main groups (Callon et al., 1991):

Output indicators: the aim is to count publications. This indicator is only valid to measure the quantity of results, ignoring other aspects such as quality and content. These indicators include: number of publications, percentages, distribution by indexes.

Visibility and impact indicators: these are based on the number of citations received by the publications or by the journals in which they are published. These in turn are subdivided into two: indicators based on the impact factor and those based on citation counts.

2.1) Indicators based on the impact factor: these indicators are calculated by obtaining the average number of citations received by the works in a specific year of a journal. Within this group we can find the expected, weighted, relative, etc. impact factor.

2.2) Indicators based on the number of citations: these indicators represent the influence and impact of publications or a set of publications, such as the publications of an author. Within this group, complex bibliometric indicators have recently been developed for the analysis and normalisation of citations such as: h-index, g-index, q2-index or the Crown index.

3) Collaboration indicators: these indicators quantify collaboration in scientific production, calculating measures based on the authors or institutions that sign the documents.

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In order to carry out any bibliometric study it is necessary to have a bibliographic database where information of interest for the study is stored, such as author, title, date, name of the journal of publication, keywords, citations received, etc. The three most important bibliographic databases are Clarivate Analytics' Web of Science (WoS), Elsevier's Scopus and Google Scholar. They all cover a wide range of publications in the sciences, social sciences and humanities (Martínez-Sánchez et al., 2014). The difference between them is that, while Google Scholar is free, the other two are paid, and the main difference is that WoS and Scopus carry out quality control and error debugging processes on the journals to be indexed.

WoS has two features that make it the choice of most researchers (Martínez-Sánchez et al., 2017):

First: It indexes a significant number of journals since its origins in 1900, in contrast, Scopus only collects information on publications since 1996.

Second: WoS is used to construct the impact factor of a journal. This factor is a key indicator for evaluating the quality of a researcher's scientific activity and is grouped in the Journal Citation Reports (JCR) database with two editions, one that evaluates science journals and another edition for social science journals. It should be noted that Scopus does not directly reflect impact factors or citations in WoS.

2. Objectives

The main objective of this work is: To analyse the scientific production hosted in the WoS that has been produced in Andalusia, in order to find out the causes that may influence the scarcity of scientific production and the low impact indices.

In order to achieve this general objective, the following specific objectives are proposed:

- To study the bibliometric indices of productivity, quality and impact. The productivity index will measure the number of scientific articles published by each author in which they are classified. The impact will measure the quality of the scientific journals in which they are published. And the quality index (G-Index and H-Index) will measure the author's impact on the scientific production in the area.
- To find out which topics have the greatest impact. An attempt will be made to determine which topics are most hegemonic by determining their density and centrality.
- To find out how the topics behave, if the network is well structured. The aim is to find out how the themes are distributed in the two-dimensional strategic diagrams.
- Identify how each of the variables of an article are related to each other, such as language, journals of publication, citations, impact, etc.
- Identify what types of authors publish and the impact of their publications.
- Identify weaknesses in the area of Social Work that influence the bibliometric quality indexes.

3. Methodology

The WoS (Web of Science) indexed database was used to search for the articles under study. The target population was selected according to the following parameters:

An advanced search was performed by combining the following elements: "Social Work", each of the provinces that make up the autonomous community of Andalusia and Spain. The first term will determine a search focused on this area of knowledge, excluding any other. The second determines each of the provinces that make up the autonomous community of Andalusia. The possible values are restricted to Almería, Cádiz, Córdoba, Granada, Huelva, Jaén, Málaga and Seville. And the third element is used to delimit the geographical area to Spain.

Within the WoS advanced search engine, the main collection (Web of Science Core Collection) was selected and the following field labels and Boolean operators were introduced in the advanced search engine: WC = "SOCIAL WORK" AND AD = "SPAIN" AND CI = "@PROVINCIA". The field label WC determines the selection of one of the categories in which all Social Work articles are classified in WoS. Within these categories, one of the categories is the objective of the study (SOCIAL WORK). The second field label used is AD, which identifies the author's address. This takes the static value "SPAIN" to delimit

the geographical area to Spain, thus excluding other locations outside this geographical area. And finally, the third field label is the CI, which searches for the city or region within the author's address field. This field is represented by the variable @PROVINCIA, where it takes the values of each of the provinces that make up the autonomous community, represented by its name in English, which is the same as in Spanish, except for Seville, which is "SEVILLE". All of them are joined by the Boolean operator "AND", which determines that for the sentence to be fulfilled and take the true value, each of the operators must be true, that is, each of the three conditions must be met. Unfortunately, there is no value in the author's address that refers to our autonomous community, so searches have to be made for each of the provinces that make it up.

The time period selected was from 1900 to 2022. The year 2023 is not taken into consideration as it is not a full year.

The search within the Web of Science Core Collection was limited to the following databases:

- Science citation index expanded (SCI-EXPANDED)
- Social Science citation index (SSCI)
- Art & Humanities citation index (A&HCI)
- Emerging Source citation index (ESCI)

The data obtained is filtered by selecting only the articles and eliminating other works such as letters from editors and book reviews.

This search returns a total of 291 articles indexed from 1995 to 2022, which will be the population to be analysed. These 291 articles are distributed among the following provinces: Sevilla 50, Málaga 50, Granada 50, Huelva 38, Jaén 37, Córdoba 27, Cádiz 22 and Almería 17.

The WoS search does not provide information on the citations and indexing of the journals in the Scopus database, so a manual search of all the articles is carried out, noting them down in the fields added in the instrument.

Once the target population has been obtained, the WoS database returns a series of fields that are extremely useful for the study, but they are not sufficient to achieve the objective of the study, so they must be completed with additional data that must be searched manually and inserted into a database created for this purpose.

The data provided in the manual search will be divided into the following categories:

- Article data: province, WoS citations, Scopus citations, methodology.
- Journal data: database in which it is indexed (JCR, SCOPUS, ESCI), JCR quartile, SCOPUS quartile, JCR impact, SCOPUS impact.
- Data on the authors: number of authors, their sex, nationality, type of author.

With regard to the type of author, the authors have been classified into the following groups:

1. A-TSA: authors who are academics in the area of Andalusian Social Work are included in this group.
2. A-TS: authors who are academics in the field of Social Work from Spain and not from Andalusia are included in this group.
3. A-TSE: this group includes academics who belong to the area of Social Work and are foreigners.
4. A-NTSA: authors who are academics from outside the field of Social Work and are from Andalusia are included.
5. A-NTS: authors who are academics from outside Social Work and who publish from Spain, but not in Andalusia, are included in this group.
6. A-NTSE: includes authors who are academics from outside Social Work and are foreigners.
7. I-A: includes researchers outside the academic field and are Andalusian.
8. I-E: researchers outside the academic field are included and they are from Spain, but not Andalusian.
9. I-EX: researchers outside the academic field are included and are foreigners.
10. OTHERS: anyone who cannot be included in the previous groups.

In a second analysis, the data are reprocessed to see the different bibliometric quality indices. For this, the SCIMAT software will be used. This is a software for the creation of scientific maps in which measures of performance and quality of the maps are integrated (Cobo et al., 2012). The main indicators are the keywords of each of the articles, as well as the citations received. The steps followed for the study with SCIMAT are as follows:

Normalisation of the keywords of the articles. For this normalisation, those keywords that are similar in singular and plural, and those that have the same meaning, will be joined and assigned the same value.

Construction of the co-occurrence matrix. We proceed to construct the square co-occurrence matrix, which will have $N \times N$ values, where N represents the keywords, excluding the pair itself. Thus, if two keywords appear together in the articles, they are assigned an equivalence index of 1, otherwise 0 (Cobo et al., 2012).

The co-occurrence matrix shall be processed with SCIMAT with the following values:

- Minimum data frequency: 2. Normally, it is usually 3, but it is lowered due to data sparsity.
- Choice of network construction: co-occurrence of terms.
- Minimum frequency of co-occurrence: 1. Normally 2, but lowered due to scarcity of documents.
- Selection of the similarity measure used to normalise the network: equivalen index.
- Selection of the clustering algorithm: simple centres algorithm, with the parameters of maximum network size = 6 and minimum of 3.
- Selection of the document allocator: core mapper and secondary mapper.
- Selection of the bibliometric measure of quality: g-index and sum citations.

Finally, a study of the bibliometric networks constructed using the VosViewer tool. This will allow us to study the networks constructed by identifying the relationships between authors, institutions and subjects.

The “h-index” or “Hirsch index” is an indicator commonly used in bibliometrics to evaluate the scientific production of authors, journals, etc. It was proposed by Hirsch, J.E. of the University of California in 2005. This index makes it possible to measure both the quality (number of citations received) and the quantity of scientific production, giving considerable importance to the number of publications of an author, valuing the scientific effort prolonged throughout the author's academic life.

The calculation is made by ordering the publications by the number of citations received in descending order and then numbering and identifying the point at which the order number coincides with the number of citations received per publication.

On the other hand, the “g-index”, proposed by Leo Egghe in 2006, is an index that, like the previous one, quantifies bibliometric productivity based on the history of publications and citations received, and is therefore very similar to the h-index. It is calculated by sorting publications according to the number of citations received in descending order and two columns are generated, one for the cumulative number of citations received and the squared position number. The index would be the order number in which the cumulative number of citations is equal to or greater than the squared position number.

In this paper we are going to use the g-index instead of the h-index, which is the most widely accepted by all publications and in all the existing bibliography on bibliometric analysis. The reason for this decision is that, following Costas & Bordons (2008), for the study of bibliographic productions with few documents or a low number of citations, it is advisable to use another index that better weighs this scarcity. Costas & Bordons (2008) conclude that the “g-index” presents two important improvements compared to the “h-index”. The first is that it considers the weighting of the citations received by the documents in its calculation, and the second is that, for a given researcher, it is not limited by the total number of publications, making it more appropriate for evaluating these researchers with fewer publications. In the data collected, two problems can be observed that can be improved by this index. The first is the low bibliographic output for a detailed bibliometric analysis, and the second is that the bulk of the output is concentrated in a very short range of years, from 2010 to 2022, with the bibliographic output from 1995 to 2010 being very low. Because of this problem, SCIMAT will not be able to create thematic evolution maps.

4. Results

4.1. Number of publications

The number of publications is uneven across years. It can be seen in Table 1 that during the period from 1995 to 2009, only 23 articles have been published. The number of publications starts to take off timidly from 2010 and culminates in 2017, where it goes from 17 articles published in 2016 to 29 articles in 2017.

4.2. Language of publications

The study by language of the article published shows that although at the total level of the autonomous community of Andalusia the values between English and Spanish are practically equal in percentage (English 49.14% and Spanish 49.83%), at the provincial level there are large differences, with provinces such as Almeria and Cordoba having more than 80% of publications in English, while this is reversed in the case of Granada and Jaen where the majority of publications are in Spanish. If we compare these percentage values with those at the Spanish level (English 62.01% and Spanish 37.19%), we can see that the percentage of publications in English is lower in Andalusia than the Spanish average. The percentage shows the weight of each language in the total number of articles published by province.

4.3. Quotations from publications

With regard to the citations received per article, it can be seen at a glance that, both in terms of number of citations and percentage, articles published in English receive far more citations. This may have a significant impact on the bibliometric quality indices, as they are constructed on the basis of the citations received by the articles.

4.4. Quartile of journals

Focusing on the quartile in which the journal was located on the date of publication of the article, we find that in the articles indexed in JCR there is an almost homogeneous distribution, while this is not the case in those indexed in SCOPUS, where a predominance of the Q1 and Q2 quartiles is observed.

4.5. Research areas

The Web of Science database classifies scientific articles into different categories based on the field of study to which they belong. Each article is assigned one or more categories depending on the main topic of the article and the area of research to which it belongs. Of the articles studied, although they all share the same area (Social Work), this may appear in the first place or in other secondary categories, which will determine the exact area of research.

4.6. Type of article and research methodology

The articles are divided according to their methodology into: theoretical review, research and intervention. In turn, the research articles have been divided according to the type of methodology used (quantitative, qualitative and mixed). It can be seen that in English, research articles predominate, while in Spanish, theoretical review articles are in the majority. With regard to the methodology used in the research articles, it can be seen that in Spanish, qualitative methodology is predominant.

4.7. Number of authors

The number of authors signing each article varies between 1 and 17 authors, but the mean is 2.79 with a variance of 3.838. Most of the authors are women, representing 57.07% of the total, and if we talk about the main author signing the article, women represent 57.13%. With regard to the articles published according to the indexing database, and taking the main author, it can be seen in table 15 that women outnumber men as a percentage in all the indexing databases studied. And if we take not only the main author but all the authors involved in the article, the percentages show that women continue to outnumber men, although the increase in the number of women in the ESCI.

5. Discussion

The data presented above show that there is a low scientific production in Andalusia compared to the Spanish average, and that scientific production in Spain is also low compared to neighbouring countries. The reasons for this low production in WoS point to two main reasons: the late incorporation into higher doctoral studies and the fact that the labour market demands professionals who focus on problem solving and not on research work.

On the other hand, existing research in WoS is mainly in Spanish, which means that these articles cannot be published in international journals, where the majority language is English, relegating their publication to Spanish or Latin American journals where articles in Spanish are accepted, but which are not indexed in ESCI and only one has been in the lowest quartile of SCOPUS for the last two years. However, this trend has been changing in recent years, as authors are beginning to publish in English and in international journals, perhaps due to the need for university promotion, both for access to teaching posts, promotion in these posts, directing theses, leading research projects, etc.

The journals indexed in ESCI within the WoS have contributed notably in Andalusia and Spain to the increase in scientific production, such as the journal "Cuadernos de Trabajo Social". The journals indexed in ESCI have grown considerably in recent years, allowing the dissemination of knowledge, which would otherwise be lost. However, the criticisms of these journals are the large number of indexed journals from different disciplines, where journals that are highly recognised by the scientific community coexist with other incipient journals of low quality. From the point of view of bibliometric quality and impact assessment, ESCI citations are not computed for the elaboration of indexes (h-index and g-index).

For all these reasons, it is necessary firstly to publish both research articles and articles based on scientific evidence, since without publication, knowledge is not disseminated. Secondly, publishing in English will open the doors to international journals, which are indexed in JCR and SCOPUS, which will mean that more members of the scientific community will cite it than if we limit ourselves to publishing in Spanish. All of this will increase the scientific development of the area of Social Work. Castillo's studies (2011) indicate that Social Work in Spain, and therefore in Andalusia, suffers from a lack of scientific development in its knowledge, which is completely correct in view of the results obtained in this work.

6. Conclusions

Scientific production in Andalusia compared to the Spanish average is lower in both quantity and quality, being not only lower in number of publications, but also obtaining a better number of citations.

Of the items recovered prior to 2012, production remained low, with a significant increase from this year onwards. By Andalusian provinces, the three with the highest production are Granada, Malaga and Seville, and the least, Almeria.

In Spanish journals, the preferred language of publication is Spanish, with a low number of publications in English. In international journals, the exclusive language is English.

Publishing articles in Spanish is equivalent to not having the option of being indexed in reference databases such as JCR and SCOPUS, as the main journals that publish in Spanish are not indexed in these databases, but are indexed in ESCI. Except in the case of the journal Alternativas, which has been indexed in Q4 of SCOPUS since 2020.

At the Andalusian level, there are differences between each of the provinces in terms of citations, corroborating the correlation between publications in English and citations received. Cordoba is the province with the highest proportion of publications in English out of the total, and receives the most citations for articles published in English.

Of the three databases analysed (JCR, SCOPUS and ESCI), more citations are received from SCOPUS than from JCR, and from ESCI, the number of citations is negligible in relation to the publications.

The quartiles in which JCR and SCOPUS are indexed are higher for SCOPUS than for JCR, with SCOPUS having more articles indexed in Q1 and Q2.

Authors who publish as a main area of research other than Social Work receive more citations with a lower number of articles than Social Work authors.

Women, as the main authors of articles, slightly outnumber men in the publication of articles indexed in WoS. And in turn, women have a higher percentage of articles indexed in SCOPUS than in other databases.

Most of the authors who publish in the area of Social Work research are academics who come from areas other than Social Work.

Academics who are not from the field of Social Work (A-NTSA and A-NTS) publish mainly in English, while those who are from this field publish more in Spanish. And the journals in which they publish are international journals.

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