Review of employment and disability: bibliographic analysis

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Abstract

Purpose - The social and work inclusion of people with disabilities is an important area of public action and research today. Future trends in the economy and lifestyle represent new challenges for the inclusion of disabled people. This paper aims to provide a bibliometric analysis of the growing amount of research publications currently dealing with problems associated with people with disabilities in employment. The papers are analysed to gain a perspective on any changes in the field.

Design/methodology/approach – In this study, the analysis is conducted using a literature review and bibliometric analysis techniques in particular. The bibliographic source supporting this analysis resulted from a search of Scopus using Disability, Employment and Work as search terms, which yielded 750 publications spanning the previous nine years. VOSviewer was applied to facilitate the analysis.

Findings – The findings indicate that up until 2016, the conversation revolved around health and employment, and from 2017 onwards the research has become more focused on the employment of people with disabilities. Socioeconomic factors affecting people with disabilities appear as one of the causes impairing their inclusion, such as the different intellectual disabilities curtailing their employment and education for work.

Research limitations/implications - This analysis limited itself to only one database and open access articles. Therefore, further research is needed with a larger bibliographic base covering other aspects related to the future of disability employment.

Practical implications – This review may serve as a valuable source of information for researchers for further investigations in this area. And to aid in the development of effective policies to address existing social stereotypes.

Originality/value – This research illustrates, through the use of VOSviewer, the present studies in the area of disability and employment and sets the foundations for further research.

Keywords Employment, Disability, Network analysis, VOSviewer, Bibliographic analysis, Scopus

Paper type Literature review

1. Introduction

In recent times, disability employment and inclusion have been gaining more attention within International Organisations and Academia, through international frameworks such as the United Nations Disability Inclusion Strategy (Bezyak et al., 2020). Balliester and Elsheikhi (2018), in their study The Future of Work: A Literature Review, mention that "existing literature in the future of work covers a wide range of topics, most of which are focused on technological innovation and inequality". Even though much importance is given to inequality in work opportunities, types of employment or remuneration, rarely do we find any mention of disabled people within the area of work inclusion, albeit there are vague references to the non-standard form of employment.

This review, therefore, aims to generate a dialogue and provide data to understand the role of people with mental disorders over physical disabilities in the business world, where existing social stereotypes must be challenged and in particular attention needs to be paid to

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those on the autism spectrum. It is about understanding autism as a reality that needs to be addressed by political bodies, in the same way that problems that the elderly face are being tackled, which is by stimulating their social inclusion through entrepreneurship (Quan-Haase *et al.*, 2017), or policies for the promotion of social enterprises to stimulate the economic development of rural areas (Calo *et al.*, 2018).

The acquisition of a disability in adult life was found to have a connection to mental health deterioration. Kavanagh *et al.* (2015) claim that those in a lower wealth band tend to be more at risk. Kuiper *et al.* (2016) state that finding and maintaining a job is notably more difficult for a disabled person. They explore how the impact of human values and relations aids said people to acquire and sustain work (Kuiper *et al.*, 2016). Furthermore, a study on self-reported functioning in people with recently diagnosed Multiple Sclerosis with paid jobs highlighted that between 70 and 80% were unable to sustain their work (Van der Hiele *et al.*, 2014). One study which has recently embarked on this endeavour is that of Chhabra (2020), who completed a comparative study on visually impaired people from India and Norway. He successfully proved that in both countries visually impaired people were unfairly discriminated against in the recruitment process.

Given the interest and volume of publications, the purpose of this paper is to study the differing proposals for disabled people that emerge in a changing economy, reviewing existing literature and revealing the current status of research in the field. We do so by bibliometric analysis of publications, authors and keywords. In this study, the analysis is conducted using methodologies like network analysis, and software tools previously developed for this purpose, like VOSviewer (Van Eck and Waltman, 2010) from Leiden University. Using such rigorous bibliometric tools, established and emerging research groups, the interrelationships and patterns of collaboration can be identified. In addition, a bibliometric analysis helps to graphically illustrate the evolution of publications over time and to identify areas of current research interest and possible future research directions (Fahimnia *et al.*, 2015).

The bibliographic information was sourced through Scopus, as we found it more convenient for the research. The search provided 750 studies in total, from 2011 to 2021. The *search topic* or query was: [(Disability) AND ((Workplace) OR (Employment))]. All were Open Access documents excluding the Medicine subject area. The output of the analysis consisted of the Co-Author Network with higher score authors and publications, and the Co-Occurrence Network with higher score keywords, including the trends of change with time.

Our findings indicate that up until 2016 the conversation revolved around health and employment, and from 2017 onwards the research has become more focused on the employment of people with disabilities. There is a growing trend towards understanding the socio-occupational and affective needs of people with disabilities. This is in line with a trend proposed by Darcy *et al.* (2016) which demonstrated that the research tends to be more focused on social models than on economic models. This is why the literature reviewed, aligned with Social Identity Theory (Tajfel and Turner, 2004), displays a special concern for people with autism (ASD) in a social context that advocates for a better, sustainable and inclusive world (Beatty *et al.*, 2019; Rebernik *et al.*, 2020), where higher rates of poverty are identified with higher rates of disability in the broader population (Banks *et al.*, 2017; Kavanagh *et al.*, 2015).

The results provided by this bibliographic analysis on the disability employment field are very promising. Therefore, further research is needed with a larger bibliographic base covering other aspects related to the future of disability employment.

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2. Theoretical background

According to the Centers for Disease Control and Prevention (CDC, 2012), autism spectrum disorders (ASD), characterised by repetitive and stereotyped patterns of behaviour, together with difficulties in socialising and functional impairment (American Psychiatric Association, 2000), have increased by 78% in the USA. Similarly, Taylor and Seltzer (2011) find this also to be an underlying problem in post-secondary education. The authors state that 56% of people with an Intellectual Disability (ID) fail to succeed in making the leap from sheltered workshops or daytime activity centers to full occupational integration. In the USA, according to Ballaban-Gil et al. (1996), this figure rose to 27%. Howlin et al. (2004) report that in the UK, one-third were in some form of employment. All authors agree that these are low-paid jobs, without high degrees of responsibility. For example, Eaves and Ho (2008) study the Canadian case, where only 4% of young people with ASD in transition to adulthood hold a responsible job. For their part, Baldwin et al. (2014) studied the occupational activities carried out by 130 adults diagnosed with High-Functioning Autism (HFA) and Asperger's, discovering an overqualification for the tasks entrusted to them, which generates stress and frustration. Their study also shows that these adults are people who seek self-fulfilment through the application of their knowledge and skills in the workplace.

There is evidence alluding to a growth in disability awareness due to an interest in diversity issues and as legislative frameworks expand (Beatty *et al.*, 2019). Beatty *et al.* (2019) claim this will be further enhanced as the working population ages and thus is mirrored in an increase in research interest, which still falls behind other diversity areas. The authors provide a succinct analyse of both quantitative and qualitative empirical data in the treatment of disabled employees by using the Stone and Colella (1996) framework – a model devised to illustrate how "person characteristics, environmental factors and organisational characteristics combine to affect the way disabled individuals are treated in organisations" (Stone and Colella, 1996) – but they believe more collaboration is required in this area to explore the range of treatment experiences. In a recent study where the pessimistic views of employers towards disabled employees was explored to try to discover if there was any empirical evidence to support their concerns and to create a framework to provide recommendations to organisations on how to develop a more inclusive environment, the Stone and Colella framework was again among the main models implemented (Bonaccio *et al.*, 2020).

Other areas of research concern the growing number of people who, in times of economic crisis, may be trying to profit from disability benefits or allowances without actually being disabled (Von Wachter *et al.*, 2011; Staubli and Zweimüller, 2013). In addition to this, there is research that addresses the incapacity for work caused by the aging population, with the aim of identifying workers at higher risk of disability, where the concept of reduced daily activities would have a place (Von Bonsdorff *et al.*, 2011). McGonagle *et al.* (2015) analyse how push and pull factors influence perceived work ability (Martus *et al.*, 2010; Radkiewicz and Widerszal-Bazyl, 2005) when making the decision to delay retirement in the USA.

Bagheri *et al.* (2015) have provided data revealing that 16% of the world's population has some kind of disability. The reality seems to be that having a disability affects employability. It is within this vulnerable group, especially those with autism, that this bibliographical review is centered. It aims to provide a context for the relevant authorities to develop economic and social policies in line with the data found. Research has shown how people with physical disabilities are opting to become self-employed, and by implementing recruitment policies towards individuals with similar limitations they are contributing to the economy and society (Renko *et al.*, 2016; Dhar and Farzana, 2017).

Employment and disability In the same vein, Csillag *et al.* (2019) carried out a study on self-employment of disabled people in Hungary. The authors only came across cases of disabled people with physical impairments and vision loss. Furthermore, a study by Ashley and Graf (2017), which was based on statistical data from the USA, states that the highest rates of self-employment of people with disabilities were among those who were visually impaired. Nevertheless, this literature review shows that not only do people on the autism spectrum fail to become self-employed, but also tend to have high job drop-out rates.

This is why the literature reviewed, aligned with Social Identity Theory (Tajfel and Turner, 2004), displays a special concern for people with autism (ASD) in a social context that advocates for a better, sustainable and inclusive world (Beatty *et al.*, 2019; Rebernik *et al.*, 2020), where higher rates of poverty are identified with higher rates of disability in the broader population (Banks, 2017; Kavanagh *et al.*, 2015). In this regard, a distinction must be made between identity, understood by Erickson (1977) as the answer to the question "Who am I?" and how the social context in which we socialise and interact influences such perception (Simmel, 1977). It is a complex process in which Berger and Luckmann (1966) identify two phases. In the first stage, there is primary socialisation, developed in childhood, where emotions play a predominant role, given that the child identifies with other signifiers with which he or she can empathise, so as to internalise them and make them his or her own. This assimilation takes place through the acquisition of roles within the group with whom they share these significant emotions, such as their family and friends, among others. It is at this point that they develop (Lipiansky, 1993).

As for secondary socialisation, Paicheler (1984) understands it as a natural process by which the individual, with his or her social roles forged in the primary identity, is integrated into socialisation in other subworlds, where the employment setting and integration would be located (Merton, 1965; Hecht *et al.*, 1993). This is one of the objectives of this bibliographical review.

Tromel *et al.* (2019), in their paper *Making Future of Work Inclusive of People with Disability*, describe some of the future trends affecting the inclusion of people with disabilities in the workforce. The technological revolution would render some jobs obsolete and create new ones (Istrate and Harris, 2017; Lillywhite and Wolbring, 2019). The skills revolution would demand adaptation to the technological changes (Roulstone, 1998). Cultural change would foster new approaches in the relationship with work (Luecking, 2008). Sustainability change would impact the world of work with climate change (Gaskin *et al.*, 2017). The transition to low-carbon economy, and the accessibility challenge in smart cities to become fully inclusive for all citizens including those with disabilities, would generate more changes (Rebernik *et al.*, 2020).

Bearing these theories in mind, this review aims to generate a dialogue and provide data to contribute to the understanding of the employment situation of people with disabilities, which may help to develop effective policies to challenge existing social issues concerning employment of people with disabilities.

3. Methodology

Within the methods of literature review techniques (Grant and Boot, 2009), this study applies the bibliometric method. Two methods of analysis, bibliometric coupling and cooccurrence (Zupic and Čater, 2015) are both implemented in conjunction with the bibliographic data produced by the Scopus query. Given that there is a higher number of journals and citations in Scopus compared to the Web of Science (Hernández-González *et al.*, 2016), and there is a 95% overlap between journal citation reports publications and Scopus

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publications (Torres-Salinas and Jiménez-Contreras, 2010), we decided to use only one database, Scopus. All records were excluded by automation Scopus tools.

The investigation consisted of an initial search through Scopus of the following keywords (*disability AND workplace*) *OR* (*disability AND employment*). Thereafter, the documents retrieved were filtered by years (2011–2021), by All Open Access, by Document Type Article and Review and by excluding Medicine as a subject area. This led to a final analysis of 750 articles.

The PRISMA flow diagram in Figure 1 describes the identification, screening, eligibility and inclusion criteria of the reports that fall under the scope of the systematic review. This diagram serves as a guide for authors, reviewers and editors (Selcuk, 2019).

The use of network data analysis applied to scientific publications allows networks to be constructed based on bibliographic data connected by co-authorship, co-occurrence, citation, bibliographic coupling or co-citation links (Van Eck and Waltman, 2014). Associated to a network are two positive numbers: the strength, which indicates the intensity between two items, or nodes, for example, the number of cited references in common between two publications (bibliographic coupling links), the number of publications two authors have coauthored (co-authorship links), or the number of publications in which two terms appear

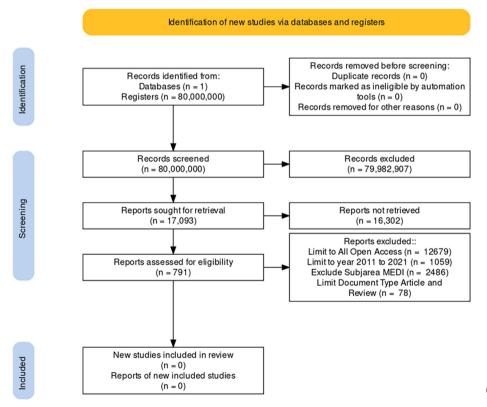


Figure 1. PRISMA flow diagram for systematic reviews (includes searches of database and registers only)

Source: Elaborated by authors with PRISMA flow diagram (Haddaway et al., 2021)

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together (co-occurrence links); and the item's weight which is associated with attributes and measures the importance of the item. Both strength and weight are more important than the higher value associated with them (distance-based maps). Items can also be grouped into non-overlapping clusters or communities based on similarities.

Bibliometric and authorship coupling identifies the cited references that two documents in the core field have in common, authors, publishers and other items. The link between them measures the number pairs of cited references and the weight, the sum of all the links departing from the item. The algorithm (Perianes-Rodriguez *et al.*, 2016) attempts to parse and resolve all cited references into their elements and convert them into a common representation with a network model constructed at the aggregated level. For example, let $\mathbf{C} = [C_{ij}]$ represent the citation matrix with N researchers and M publications, see Table 1, for a bibliometric coupling on researchers (Zao and Strotmann, 2008), and $n_j = \sum_{i=1}^{N} c_{ij}$ represents the total number of citations received by publication j from all the researchers included in the analysis. Publications with less than a given citation threshold are removed as not providing any bibliographic information. Therefore, the bibliographic coupling matrix $\mathbf{V} = [v_{ij}]$ is a NxN matrix, with v_{ij} representing the full counting bibliographic coupling between researchers i and j, is given by: $\mathbf{V} = \mathbf{C}\mathbf{C}^T$.

Co-occurrence identifies the core competencies using the present author keywords (terms) to identify the studied field's core. The link between the two terms is the number of document occurrences. The terms with a higher network weight are closer to the core of the field studied.

VOSviewer (Van Eck and Waltman, 2010) is the software selected for the bibliometric network analysis, providing a visual map of the relations among authors, publications and keywords. It calculates a matrix to represent the relationships and constructs a map employing the VOS mapping technique (Visualisation of Similarities) allowing two types of views. Network Visualisation items are represented by a circle with a label; the size of the circle depends on the weight of the item, with a different colour depending on the cluster. The lines between the items represent the links, and its length represents the strength, of which the shortest is considered the strongest (Figures 6, 7). Another visualisation is the overlay, which is similar in aspect to the network visualisation, with the items with different colours, according to the score value, that is any numerical property of the item other from the weight. Besides the views, there is a set of analysis tools that modify the layout and clustering of the active map, weight and score with different normalisations.

We have made two network maps with VOSviewer 1.6.16 (Van Eck and Waltman, 2020a), Co-Occurrence Keywords Analysis and Co-Authorship Analysis. In both, we selected *Create a map based on bibliographic data* as type of data and *Read data from*

	Ref/Pub	P1	P2	Р3	P4	Total
Table 1. Example citation matrix	R1 R2 R3 R4 R5 Total Source: Peria t	3 2 1 0 6 es-Rodriguez <i>et</i>	1 0 2 0 1 4 <i>al.</i> (2016)	2 1 0 0 0 3	$egin{array}{c} 0 \\ 0 \\ 0 \\ 1 \\ 1 \\ 2 \end{array}$	6 3 3 1 2

bibliographic database files as data source (Scopus .csv file). In the former, Co-occurrence-Author keyword as Choose type of analysis and Full counting as the counting method, 10 as Minimum number of occurrences of keyword and 10 as Number of keywords were opted for. In the latter, *Co-authorship-Authors* as Choose type of analysis and *Full counting* as counting method, 4 as maximum number of authors per document, and 10 number of authors were selected.

4. Summary of data, results and discussion

4.1 Data

In this study, we have analysed papers from the following Scopus search (disability AND workplace) OR (disability AND employment). Subsequently, they were filtered by years (2011–2021), by All Open Access, by Document Type Article and Review and excluding Medicine Subjects Area. We have worked with 750 documents from the following search:

TITLE-ABS-KEY (((disability AND workplace) OR (disability AND employment))) AND (LIMIT-TO (FREETOREAD, "all")) AND (LIMIT-TO (PUBYEAR, 2021) OR LIMIT-TO (PUBYEAR, 2020) OR LIMIT-TO (PUBYEAR, 2019) OR LIMIT-TO (PUBYEAR, 2018) OR LIMIT-TO (PUBYEAR, 2017) OR LIMIT-TO (PUBYEAR, 2016) OR LIMIT-TO (PUBYEAR, 2015) OR LIMIT-TO (PUBYEAR, 2014) OR LIMIT-TO (PUBYEAR, 2013) OR LIMIT-TO (PUBYEAR, 2012) OR LIMIT-TO (PUBYEAR, 2011)) AND (EXCLUDE (SUBIAREA. "MEDI")) AND (LIMIT-TO (DOCTYPE. "ar") OR LIMIT-TO (DOCTYPE, "re"))

Table 2 shows the ten most cited papers and their respective citations. The first is Employment and post-secondary educational activities for young adults with autism spectrum disorders during the transition to adulthood for Taylor and Seltzer in 2011, cited by 321. This paper describes the post-high school educational and occupational activities for 66 young adults with autism spectrum disorders who had recently exited the secondary school system. Analysis indicated low rates of employment among the people with disabilities this group studied.

Authors	Title	Cited by	
Taylor and Seltzer (2011)	Employment and post-secondary educational activities for young adults with autism spectrum disorders during the transition to adulthood	321	
	Trade adjustment: Worker-level evidence	141	
Von Wachter <i>et al.</i> (2011)	Trends in employment and earnings of allowed and rejected applicants to the social security disability insurance program	94	
Banks et al. (2017)	Poverty and disability in low- and middle-income countries: A systematic review	78	
Taylor and Mailick (2014)	A longitudinal examination of ten-year change in vocational and educational activities for adults with autism spectrum disorders	73	
Foster and Wass (2013)	Disability in the Labour Market: An Exploration of Concepts of the Ideal Worker and Organisational Fit that Disadvantage Employees with Impairments	41	
	Policy, citizenship and governance: The case of disability and employment policy in Australia	37	
Bratsberg <i>et al.</i> (2014)	Immigrants, labour market performance and social insurance	36	
Groce <i>et al.</i> (2014) Scott <i>et al.</i> (2019)	Surviving polio in a post-polio world Factors impacting employment for people with autism spectrum disorder: A scoping review	28 21	Table 2 Top 10 cited documents in scopu

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IEC The second paper is Trade adjustment: Worker-level evidence by Authors, Dorn, Hanson and Song in 2014. It is cited by 141 different articles. This paper analyses the effect of increased 16.1 competition from Chinese imports between 1990 and 2007 on local labour markets in the USA. Increased imports lead to higher unemployment, lower labour force participation and lower wages in local labour markets that are home to import-competing manufacturing industries. This results in transfers of unemployment, disability, retirement and health-care benefits also rising sharply in the most trade-exposed labour markets. In particular, the effect of Chinese imports influences the increase in unemployment among people with disabilities working in the manufacturing sector in the USA.

> Table 3 shows the top ten authors. Røed is the most highly regarded, with six papers (Bratsberg et al., 2013; Markussen and Røed, 2014; Bratsberg et al., 2014; Fevang et al., 2017; Andersen et al., 2019; Bratsberg et al., 2020). The paper most cited, with 36 citations, is Immigrants, labour market performance and social insurance. They studied the longterm labour market and social security outcomes of all major immigrant cohorts in Norway since 1970. Immigrants from high-income countries had the same outcomes as natives, while labour immigrants from low-income countries showed decreasing employment rates and increasing participation in disability programs over a life cycle (Bratsberg *et al.*, 2014).

> Figure 2 presents papers by year. A substantial growth is evident in the period under study (2011–2020), which is illustrated in the graph. The number of articles published on disability and employment grew by 210% between 2011 and 2020. Moreover, 2019 leads with the highest number of publications over the entire period with a total of 16%. Another vear that stands out is 2015 with 85 publications (11% of the total) and with an increase of 37% over 2014.

> Figure 3 illustrates documents per year by source. At the top is the medical journal *Plos* ONE with a total of 97 publications, 12% of the publications in the period studied. Other journals which feature prominently are Iza Journal of Labor Policy with seven papers in 2014 and Disability and Society in 2020 with six.

> Figure 4 represents the study of areas by knowledge. In this area, it should be noted that 29% of the documents are from the Social Sciences, 11% from Business, Management and Accounting and 10% in Economics, Econometrics and Finances.

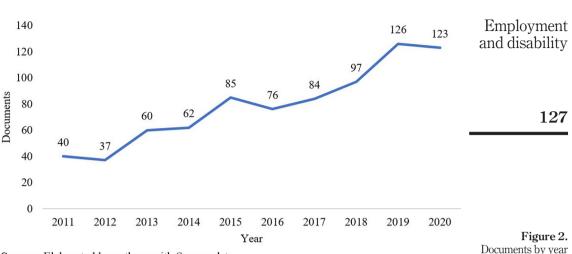
> Documents by country are illustrated in Figure 5. The USA leads with a total of 24% of the papers collected, followed by the UK with 20%.

RO [*]	Author name	Document
1	Røed, K.	6
2	Banks, L. M.	4
3	Jones, M.	4
4	Lindner, S.	4
5	Marston, G.	4
6	Romeo, M.	4
7	Taylor, J. L.	4
8	Wass, V.	4
9	Beatson, A.	3
10	Bratsberg, B.	3

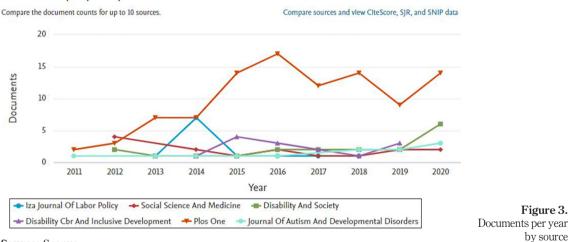
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Table 3. Top 10 authors in

scopus



Source: Elaborated by authors with Scopus data



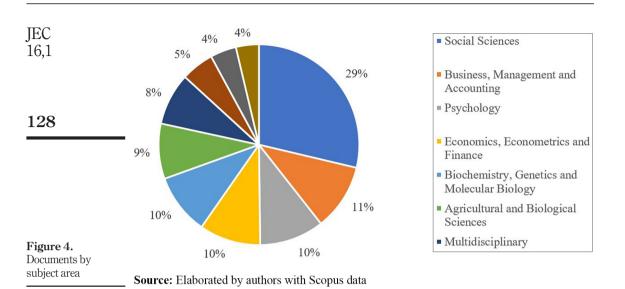
Documents per year by source

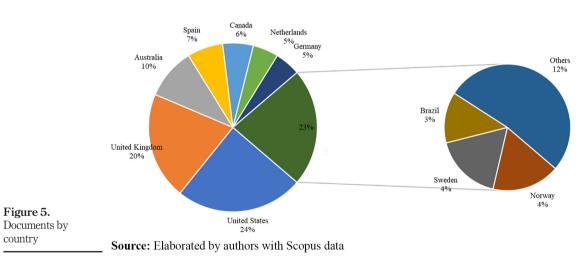
Source: Scopus

4.2 Results

The results obtained in this paper give a current overview of the problems encountered by people with disabilities when seeking employment. In this way, the aim of the research, which was to provide an analysis of the growing body of research literature dealing with the situation of people with disabilities in employment, is achieved. Interesting conclusions are drawn that could contribute to the understanding of the employment situation of people with disabilities and may help to develop effective policies to challenge existing social stereotypes.

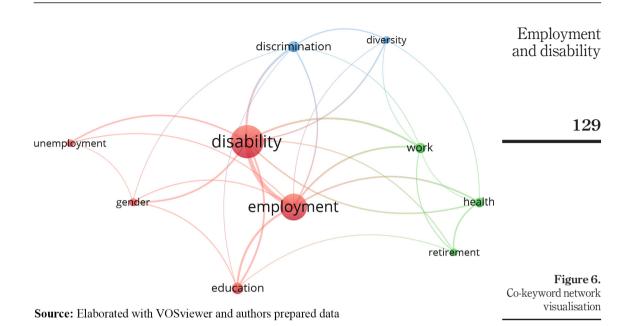
4.2.1 Co-occurrence analysis. The co-occurrence analysis is performed with the author keywords; the resulting network map is presented in Figures 6 and 7, where the keywords

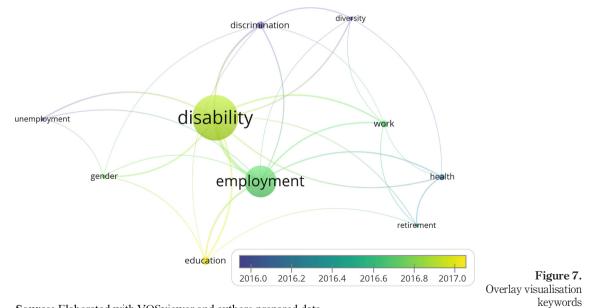




clustering can be observed. The keywords are organised in three clusters as shown in Figure 6; they are based on the distance analysis using the links strength and the weight of citations (which is based on occurrences). Cluster 1 is the most prominent and has five items with keywords such as *disability*, *education*, *employment*, *gender* and *unemployment*. Cluster 2 has three items *health*, *retirement* and *work*, while Cluster 3 contains two items *discrimination* and *diversity*.

The size of the circles illustrating the occurrences of keywords is represented in Figure 6 – the larger a circle, the more a keyword has been co-selected in the publications. The keywords "disability" and "employment" represent the greatest strength. The distance between the two keywords demonstrates relative strength and topic similarity (Guo *et al.*, 2019). Circles with the same colour indicate a similar topic among publications.





Source: Elaborated with VOSviewer and authors prepared data

IEC As reported in Figure 7, even though there was a steady growth of publications between 2015 and 2019, the most cited papers are dated between 2016 and 2017. This figure is based 16.1 on the occurrences and average publication per results by year.

> As shown in Figure 7, the colours were used to represent the time-varying keyword occurrences from 2016 (in dark purple) to 2017 (in vellow). The keywords referred to in both years are respectively discrimination, diversity, health, retirement, unemployment in 2016 and disability, education, employment, gender, work in 2017.

> In Table 4, a link means a co-occurrence connection between two keywords, in this case *disability* is highest with nine links and 153 occurrences, and is followed in second place by employment with eight links and 102 occurrences.

> The cluster detail, sorted by each total number of citations, is as follows (Van Eck and Waltman, 2020b):

- Id: The keyword ID. They are in order of occurrences. The top is *disability* and the second is *employment*, with 153 and 102 occurrences, respectively.
- Label: The keyword label. There are five keywords in cluster 1, three keywords in • cluster 2 and two keywords in cluster 3. Cluster 1 contains the most.
- Cluster: The number of the cluster to which a keyword belongs, in this case one, two and three.
- Links: means a co-occurrence connection between two keywords
- Link strength: indicates the number of publications in which the keywords occur with others. Table 5 shows the matrix of co-occurrences keywords.
- Occurrences: number of occurrences of the keyword. Disability is the most frequent with 153 occurrences and the second is *employment* with 102. In Table 5, we can see the co-occurrence keywords matrix of the top ten keywords, which highlight that disability-employment appears in 29% of papers. Also noteworthy is disabilitydiscrimination in 7% of documents and disability-work in 5% of papers.
- Avg. Pub. Year: The average year of keywords. More has been written about • disability and employment in 2016–2017 than in all the other years.

Cluster 1 includes 426 papers (37%). The most cited reference is Taylor and Seltzer (2011). cited 321 times. This report describes the post-high school educational and occupational

	ID	Keyword	Cluster	Links	Total link strength	Occurrences	Avg. Pub. Year
	kw1	Disability	1	9	81 66	153	2017
	kw2 kw3	Employment Education	1	8 5	20	$\begin{array}{c} 102 \\ 21 \end{array}$	2017 2017
	kw4 kw5	Discrimination Work	3 2	6 6	19 18	20 18	2016 2017
	kw6	Health	2	5	15	16	2016
Table 4.	kw7 kw8	Gender Diversity	$\frac{1}{3}$	5 5	12 10	11 10	2017 2016
Cluster detail top ten	kw9 kw10	Retirement Unemployment	2 1	$\frac{4}{3}$	9 8	10 10	2016 2016
keywords by occurrences	Source	Elaborated with V	OSviewer a	nd authors	s prepared data		

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Source	Target	Value (%)	Employment and disability
Disability	employment	29	und disubility
Disability	discrimination	7	
Education	employment	7	
Disability	education	5	
Disability	Work	5	
Disability	Gender	5	131
Employment	Work	5	
Disability	unemployment	4	
Employment	Health	4	
Disability	diversity	3	
Disability	Health	3	
Discrimination	employment	3	
Health	retirement	3	
Discrimination	diversity	2	
Disability	retirement	2	
Education	Gender	2	
Employment	Gender	2	
Employment	unemployment	2	
Retirement	Work	2	
Discrimination	education	1	
Discrimination	Gender	1	
Discrimination	Work	1	
Diversity	employment	1	
Diversity	Health	1	
Diversity	Work	1	
Education	retirement	1	
Gender	unemployment	1	
Health	Work	1	Table 5.
			Co-occurrence
Source: Elaborated by authors	s with VOSviewer results		keywords matrix

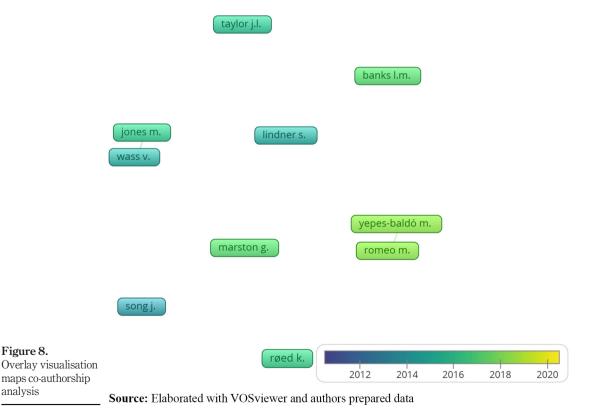
activities for 66 young adults with autism spectrum disorders who had recently exited the secondary school system. Analyses indicated low rates of employment in the community.

Cluster 2 includes 71 papers (6%). The most cited reference is Shaw *et al.* (2011), cited 52 times and the main keywords are *about work* and *health*. Increasing evidence suggests that work-related factors influence the extent of absence due to sickness. Conditions at work, such as physical strain, work stress, lack of organisational support, job dissatisfaction and fear of re-injury, may indicate significant barriers to return to work. They propose that effective communication with key stakeholders helps build clients' capacity to resolve barriers to return to work.

Cluster 3 includes 29 papers (4%). The most cited reference is Ameri *et al.* (2018) with 35 citations and main keywords *discrimination, disability*. The authors investigate potential discrimination against people with disabilities through a field experiment that sent job applications to 6,016 accounting positions for which the applicants' disabilities are unlikely to affect productivity. The disability applications received 26% fewer expressions of employer interest. This gap was concentrated among experienced applicants and small private companies that are not covered by the Americans with Disabilities Act (ADA). Tests suggest possible positive effects of the ADA, but not of state laws, in reducing the disability gap. Results indicate there may be substantial room for employer and policy initiatives to improve employment opportunities for people with disabilities.

4.2.2 Co-authorship analysis. The co-authorship analysis of shared publications is conducted with the authors' publications; the resulting network map is presented in Figure 8. There are few links between authors' writing about disability and employment, in no more than four documents together; the findings indicate only two. One of them is between Jones and Wass, co-authors along with Baumberg *et al.* (2015) of the article *Disability prevalence and disability-related employment gaps in the UK 1998–2012: Different trends in different surveys?* which has been cited in 13 articles. The authors consider that "a key indicator of progress is the trend in the disability-related employment gap and the percentage point difference between the employment rate of people with and without disability-related employment gap in the three surveys (General Household Survey (GHS) or the Labour Force Survey (LFS), The Health Survey for England (HSE)) in the UK. From cross-sectional comparisons between the surveys, they conclude that there is a negative relationship between disability prevalence and the employment gap narrowed in the UK from 1998 to 2015.

The other link was between Yepes-Baldó and Romero, who co-wrote alongside Romeo et al. (2020) the article Job satisfaction and turnover intention among people with disabilities working in Special Employment Centers: The moderation effect of organisational commitment. The goal of this paper is to contribute to the growth of research on people with disabilities in employment, in particular in relation to their job satisfaction (JS),



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organisational commitment (OC), and turnover intention (TI). This study explores the effect of job satisfaction on turnover intention among employees with disabilities and the moderation effect of organisational commitment and its four dimensions on this main relationship. A total of 245 Special Employment Center employees in Spain answered a questionnaire. The results show that organisational commitment and its dimensions have no significant effect on the direct relationship. However, some components of job satisfaction, such as the relationship with co-workers and with supervisors, play a significant role in the relationship with turnover intention when moderated by affective and value commitment. The results show that it is important that human resources departments create conditions favouring a work environment with positive interpersonal relationships between employees and managers to minimise turnover intention at Special Employment Centers.

Table 6 shows the results of the VOS viewer co-authorship analysis. Authors are listed in order of the number of citations. Taylor is at the top with four documents, 416 citations and an average of 104 citations per document. The most cited paper is *Employment and post*secondary educational activities for young adults with autism spectrum disorders during the transition to adulthood (Taylor and Seltzer, 2011). The second is Song with four papers, 253 citations and an average of 63 citations per documents. His most cited paper is Trade adjustment: Worker-level evidence (Autor et al., 2014).

4.3 Discussion

Based on the co-keyword network analysis, three groups of research related to disability and employment can be determined. Three areas of thematic analysis emerge: Cluster 1 addresses a variety of disability, education and employment issues; Cluster 2 includes articles on occupational health, partial disability and retirement benefits; Cluster 3 is more focused on diversity and discrimination.

4.3.1 C1: Disability, education and employment. In the case of people with autism spectrum disorders, the situation does not improve as they transition from adolescence to adulthood, the stage at which they finish their studies and must enter the labour market. On the basis that professional performance can work as a therapy for people with ASD (Robertson *et al.*, 2019), Taylor and Seltzer (2010) consider that there is an underlying problem in the education system, which is much more pressing in cases with intellectual disabilities (ID). The authors state that 56% of people with ASD and Intellectual Disability (ID) fail to succeed in making the leap from sheltered workshops or daytime activity centers

RO*	Author	Link	Total link strength	Documents	Citations	Avg. Pub. Year	Avg. citations	
1	Taylor J.L.	0	0	4	416	2016	104	
2	Song J.	0	0	4	253	2014	63	
3	Banks L.M.	0	0	4	116	2017	29	
4	Røed K.	0	0	6	78	2016	13	
5	Wass V.	1	3	4	76	2015	19	
6	Marston G.	0	0	4	45	2017	11	
7	Jones M.	1	3	4	40	2016	10	
8	Lindner S.	0	0	4	12	2015	3	T-1-1- C
9	Romeo M.	1	4	4	5	2018	1	Table 6.
10	Yepes-Baldó M.	1	4	4	5	2018	1	Overlay visualisation
Note	RO: Ranking Or	der						maps co-authorship analysis

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to full occupational integration. Both carried out a study with individuals affected by ASD between 22 and 53 years of age, highlighting a need for students to complete their secondary educational studies and to receive more institutional support, as they consider that the current system of support for people with ASD is insufficient and does not meet their requirements. Taylor and Mailick (2014) limit the age range to ten years after the end of secondary school. In this study, in addition to addressing the personality characteristics of those diagnosed, attention is paid to contextual factors, especially the role of the family, in the integration process of those affected by ASD. They conclude, like Carstensen (1992), that the parents' social support network is essential for them to gather all the necessary information about services and employment opportunities for their sons and daughters.

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Moreover, those who enter the labour market do so in jobs where they rarely achieve high levels of responsibility (Eaves and Ho, 2008). According to Barnhill (2007), this could be a result of excessive job hopping, which may be due to two factors: first, a poor working environment caused by rejection from co-workers (Beardon and Edmonds, 2007), and second, overgualification that makes them feel unfulfilled in their job (Baldwin *et al.*, 2014).

As early as 2011, it was estimated that 15% of the world's population had some form of disability (World Health Organization, 2011), a situation that, according to 81% of all studies reviewed by Banks et al. (2017), is causally related to poverty. Simply put, lowerincome countries, where access to sanitation and health care is difficult and malnutrition is widespread, have higher rates of disability. However, this is a reality found in all countries, and people with autism spectrum disorders (ASD) are one of the key concerns in this area among the scientific research community. According to the Centers for Disease Control and Prevention (CDC, 2012), autism spectrum disorders, characterised by repetitive and stereotyped patterns of behaviour, together with difficulties in socialising and functional impairment (American Psychiatric Association, 2000), have increased by 78% in the USA over the past decade. Moreover, it is a condition that is often associated with other pathologies such as epilepsy, schizophrenia, sleep disorders and muscular dystrophies, among others (Kohane et al., 2012; Maski et al., 2011). The variables surrounding ASD mean that there is no single standardised treatment (Weitlauf et al., 2014), which poses a challenge for Developmental Disabilities (DD) specialists, whose procedures Vohra et al. (2014) find inadequate. For instance, Ming et al. (2011) claim to have found that fewer children with ASD received referrals to primary care specialists compared to children with other neurological disorders.

Regarding children with ASD, caregivers report problems with access to services (Krauss *et al.*, 2003) and a dissatisfaction with the quality of clinical care received (Spann *et al.*, 2003) compared to other children without ASD. Taylor and Seltzer (2011) align with Howlin *et al.* (2004) in establishing a relationship between the gap in this transition from adolescence to adulthood of the ASD patient and social functioning, lifestyle and friendships, where intellectual disability is a determining factor, as it generates dependence on third parties (Taylor and Seltzer, 2011).

For their part, Baldwin *et al.* (2014) studied the occupational activities carried out by 130 adults diagnosed with High-Functioning Autism (HFA) and Asperger's, discovering an overqualification for the tasks entrusted to them, which generates stress and frustration. The study also demonstrates these people seek self-fulfilment through the application of their knowledge and skills in the workplace. For example, Stankova and Trajkovski (2010) consider that there are jobs for disabled people which are more suitable than others. They highlight work related to visual thinking and systematic information processing, without intending to pigeonhole, as those diagnosed with ASD work in various occupations (Müller *et al.*, 2003). Moreover, people with ASD need to be supported and the focus should be on

enhancing their ability to cope with a job interview, on improving their skills in acclimatising to new routines, as well as on social relationships in the workplace (Beardon and Edmonds, 2007; Robertson, 2010).

4.3.2 C2: Health, retirement and work. Cluster 2 includes articles on occupational health, partial disability and retirement benefits. The case of economically disadvantaged people who want to claim disability benefits without meeting the minimum requirements (Von Wachter *et al.*, 2011; Staubli and Zweimüller, 2013) should be highlighted. The findings also emphasise research linked to old age or eligibility for partial disability benefits (Van der Hiele *et al.*, 2014). From the literature reviewed there appears to be a correlation between disability and early economic disadvantage rates (Kavanagh *et al.*, 2015; Shuey and Willson, 2019). Kavanagh *et al.* (2015) discovered those in a lower wealth tertile were more at risk. Likewise, Shuey *et al.*, included measures of childhood disadvantage as predictors of work disability trajectories; their findings suggested that these early disadvantages played an important role in economic security in later life (Shuey and Willson, 2019).

Further studies emphasise the difficulty in sustaining or maintaining a job for people with intellectual difficulties (Holwerda et al., 2013; Kuiper et al., 2016). In comparison to nondisabled peers, people with intellectual disabilities – even though they can be seen as positive members to the workforce for being stable, loyal and competent – are three times less likely to be employed (Holwerda et al., 2013). Similarly, Kuiper et al. (2016) state that finding and maintaining a job is notably more difficult for a disabled person and they explore how the impact of human values and relations plays in aiding said people to acquire and sustain work. Furthermore, a study on self-reported functioning in people recently diagnosed with multiple sclerosis with paid jobs highlighted that between 70-80% were unable to sustain their work (Van der Hiele et al., 2014). Along the same lines, Barnhill (2007) considers that one of the main reasons for difficulties among disabled people in accessing competitive employment is related to the high level of job change that these profiles are expected to undergo, as this prevents them from settling in the job (Müller *et al.*, 2003). However, Beardon and Edmonds (2007) state that the work environment does not always contribute to the integration of employees with ASD, who welcome the opportunities provided in their work environment to overcome the difficulties arising from their disability. Not surprisingly, Müller et al. (2003) and Hagner and Cooney (2005) state that these employees are associated with soft skills such as honesty, accuracy and low absenteeism. In an endeavour to integrate beyond official institutions, Dingle et al. (2013) present the experiences of a choir made up of 89% of individuals who have experienced a mental health problem, in relation to their perception of improved personal wellbeing, using a methodology based on interpretative phenomenological analysis (IPA). These authors are in line with other similar works (Clift and Hancox, 2001; Grocke et al., 2009), whose results coincide with the concept of Social Identity Theory (Tajfel and Turner, 2004), which argues that participation in a group can have a positive impact on the participant as a member. Carpenter (2005) considers this feeling of belonging as a therapeutic tool that reduces emotional apathy, lack of motivation and social isolation. In this regard, Dingle et al. (2013) present results that confirm benefits at the individual, social and functional level of the participants in this experience.

The relationship between employment status and better health among people with or without intellectual disabilities is investigated in a recent study by Robertson *et al.* (2019). Although their evidence proved that there was no difference whether a person was intellectually impaired or not, they did find that the magnitude of the effect involved differed, opening the door for more potential studies to identify the underlying differences.

Employment and disability 4.3.3 C3: Diversity and discrimination. Cluster 3 focuses on sustainable development goals and targets (SDGs), in particular, on diversity and discrimination. Previous research in recruitment discrimination was embarked on by Ameri *et al.* (2018) when they conducted the pioneering field study on disability and hiring. Through creating fictional candidates for real accounting jobs, they could imply that small companies were less likely to be interested in applicants with disabilities, while larger companies were influenced by Americans with Disabilities (ADA) regulations (Rajeev and Jeena, 2020). Further investigations into the effects of ADA regulations and other regulation bodies by Button (2018) have shown that there may be a positive alignment regardless of the company assuming the costs of reasonable accommodation, but he strongly advises that more research should be taken on in this area. Furthermore, Bonaccio *et al.* (2020) claim there is no difference in the cost to accommodate employees without disabilities compared to other employees (Ameri *et al.*, 2018; Garcia-Sabater *et al.*, 2020).

An interesting examination was undertaken by Darcy *et al.* (2016) of disability employment practice through actual human rights complaint cases, which they explored using the social model approach. A social model of disability fundamentally places the lived experience of people with disability as the core to understanding the phenomenon of disability (Darcy *et al.*, 2016). Many studies to date have been underpinned by a medical model approach, where the focus lies on the impairment as the research subject and solutions are based on normalising the individual for work. While this may help a neoliberal economy, the social model paves the way for more inclusive recruitment policies (Darcy *et al.*, 2016). One study which has recently embarked on this endeavour has been that of Chhabra (2020), who completed a comparative study on visually impaired people from India and Norway. He successfully proved, using the social model approach, that in both countries the visually impaired people were unfairly discriminated against in the recruitment process.

To summarise the literature review findings based on the clusters, Table 7 illustrates the main papers analysed including the author, year, type of model or theory applied, research methodology, geographical context and future research suggested.

5. Conclusions

In this study, the analysis conducted is through a literature review methodology and in particular the application of bibliometric analysis techniques. To facilitate the analysis the tool VOSviewer was applied. The purpose of this review is to provide a valuable source of information which may serve as a tool for researchers conducting further investigations in this area. The bibliographic source supporting this analysis resulted from a search in Scopus using Disability, Employment and Work as search terms, which yielded 750 publications between 2011 and 2020. It shows a three-fold increase in the number of publications over this period, indicating a growing interest in disability and employment-related research.

The main conclusion that can be drawn is that there is a growing trend towards understanding the socio-occupational and affective needs of people with disabilities. This is in line with a trend proposed by Darcy *et al.* (2016) which demonstrated that the research tends to be more focused on social models than on economic models. This is why the literature reviewed, aligned with Social Identity Theory (Tajfel and Turner, 2004), displays a special concern for people with autism (ASD) in a social context that advocates for a better, sustainable and inclusive world (Beatty *et al.*, 2019; Rebernik *et al.*, 2020), where higher rates of poverty are identified with higher rates of disability in the broader population (Banks, 2017; Kavanagh *et al.*, 2015).

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C*	Author	Type of model/ Theory	Research methodology	Geographical context	Future work suggested	Employment and disability
1	Banks <i>et al.</i> (2017)	N/A	Systematic Review – disability and economic poverty relationship	N/A	Longitudinal studies measuring the economic impacts after the development of disability; intra-household poverty; the impact of economic poverty on the lives of	137
1	Stafford et al. (2019)	Social model	Qualitative method – 22 profound personal interviews	Australia	people with disabilities Need to contest the 'contractual' deficit- orientated assessment processes as the current approach devalues young people with disabilities, upholds stigma, and creates divisiveness between service users and service providers.	
2	Kavanagh <i>et al.</i> (2015)	N/A	Household, Income and Labour Dynamics survey – a population-based cohort study of working-age Australians	Australia	Further examine whether these mental health effects change over time, using methods such as growth curve models or fixed- effects models with lagged effects	
2	Robertson et al. (2019)	N/A	1970 British Cohort Study – Cross-sectional analysis	UK	Identify mechanisms that may underlie the extent of the performance of a person with or without an intellectual disability	
2	Shuey and Willson (2019)	Social model	Cohort study of baby boomers – Cross-sectional analysis	USA	The relationship between early life disadvantage, disability onset and duration, educational attainment, marriage and occupational placement	
2	Kuiper <i>et al.</i> (2016)	Social model	Exploratory qualitative network study – The study gives a first impression of how human values and relations play a role	The Netherlands	More studies that enable policy makers and the government to improve the work participation of people with a work- relevant disability	
3	Ameri <i>et al.</i> (2018)	Social model	First field experiment on disability and hiring based on	USA	Evaluate social information processing in recruiting behavior, which can reveal the reasons for <i>(continued)</i>	Table 7.Main papersanalysed

JEC 16,1	C*	Author	Type of model/ Theory	Research methodology	Geographical context	Future work suggested
138	_			Bertrand and Mullainathan (2004)		lower interest in applicants with disabilities along with specific policies or practices that can reduce this problem
	3	Darcy <i>et al.</i> (2016)	Social model	The research design used 'natural data' emanating from disability complaint cases under the Australian Disability Discrimination Act 1992	Australia	Longitudinal case studies of people with disabilities in employment with quantitative and qualitative data
	3	Beatty <i>et al.</i> (2019)	Social model: Stone and Colella FRAMEWORK (1996)	Systematic Review: empirical studies regarding the treatment of persons with disabilities in work	N/A	Collaboration between researchers and practitioners on design research programs that can increase knowledge of treatment experiences of employees with
	3	Taylor <i>et al.</i> (2019)	Social model (sex differences in employment)	organisations Multiple regression models – 443 adults with ASD	USA	disabilities in workplaces Studies that explore whether there are differences between the benefits received and the amount of financial support people with ASD, based on their sex, currently receive from the families of origin
	3	Chhabra (2020)	Social model	Exploratory case study: qualitative interviews on young adults with visual impairment	Oslo (Norway) and Delhi (India)	Studies exploring the prevalence or absence of employment barriers of people with disabilities linked to employers' discrimination
Table 7.	Not	te: C: Cluster				

Our findings indicate that up until 2016 the conversation revolved around health and employment, and from 2017 onwards the research has become more focused on the employment of people with disabilities.

Finally, the co-authorship analysis showed that there are not many links between authors' writing on disability and employment. Taylor is the most cited authors with an average of 104 citations per document, followed by Song with an average of 63 citations per document (Taylor and Seltzer, 2011; Autor *et al.*, 2014).

With regards to limitations, one of the principal ones was that we confined our research to one database, in this case, Scopus. Other international databases (e.g. Web of Science) could have been used, however, knowing that there is a 95% overlap between Journal Citation Reports and Scopus publications (Torres-Salinas and Jiménez-Contreras, 2010), we decided to use Scopus. A further limitation could come from the search criteria itself, in that there could be other relevant terms in the search for articles that address the issue of employment for people with disabilities that may have been omitted. Furthermore, by limiting our search to open access documents and by excluding the subject area of Medicine, we may have unintentionally excluded relevant publications, PhD investigations or chapters from books. We are also aware that this type of analysis can only offer a short-term forecast. However, the purpose of our analysis was to present the emerging trends of Disability and Employment at this present time, which we feel was fulfilled by the Scopus data collected. Furthermore, a bibliometric analysis is quantitative in nature (Wallin, 2005; Donthu et al., 2021): therefore, to counteract this issue, we applied a thorough content analysis on the literature reviewed. Nevertheless, this research's main objective is to provide a gateway for future researchers in this field.

The results provided by this bibliographic analysis in the area of research on the disability employment field are very promising. Therefore, further research is needed with both a larger and wider bibliographic base to include emerging papers covering other aspects related to the future of disability employment.

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