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Unaccompanied foreign minors and education: a bibliometric analysis of the international academic literature

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Introduction: The migration of unaccompanied foreign minors presents a significant global educational and social challenge. This study aims to analyze the international scientific production on UFM in the educational field, identifying key trends, influential authors, and institutional contributions.

Methods: A bibliometric analysis was conducted using data from the Web of Science and Scopus databases, applying rigorous inclusion and exclusion criteria to ensure the relevance of selected studies.

Results: The findings reveal that research on UFM in education is limited, with publications concentrated in a few high-impact journals and led by a small group of prolific authors. The results align with Bradford's and Lotka's laws, demonstrating an uneven distribution of research outputs and the dominance of a few institutions, particularly the University of Granada. Thematic analysis highlights a focus on academic self-efficacy, employability skills, social inclusion, and digital competencies.

Conclusion: However, gaps remain in understanding teachers' perceptions of UFM and the impact of educational policies on their integration. Addressing these gaps is essential to fostering inclusive education and informing policy development. Future research should prioritize teacher training programs to challenge stereotypes and implement strategies that enhance digital inclusion and social integration for this vulnerable population.

KEYWORDS

bibliometric analysis, unaccompanied foreign minors, UFM, education, scientific production

1 Introduction

Migration constitutes a fundamental process of social and economic transformation. It is a phenomenon that currently shapes both national and international agendas across European countries (United Nations, 2025; United Nations, 1959). In recent years, new migration flows from the Global South have led to a significant increase in the number of unaccompanied foreign minors (UFM), who primarily originate from countries experiencing armed conflict, oppression, human rights violations, and precarious living conditions. In response to this

situation, migration policies have evolved to include new forms of identification, reception, and protection for these individuals (Aguado-Moralejo et al., 2019; Becker Herbst et al., 2018; Delgado-Baena et al., 2022; Díez-Bermejo et al., 2021; Vela-Jiménez et al., 2022; Wise, 2023; López-Ulla, 2022).

UFM are understood as children and adolescents under the age of 18 who are outside their country of origin without the company of their parents or a legal guardian. In most cases, their migration is motivated by the need to escape extreme poverty, exploitation, or structural violence (ACCEM, 2025; United Nations, 2025; Save The Children, 2019; Olivares-García et al., 2024). This group typically shares the following characteristics: (a) they are between 14 and 17 years old; (b) the majority are male; (c) they have limited prior schooling; (d) they contribute economically to their families of origin; (e) they have work experience in informal sectors; and (f) they lack the necessary training to access the labor market legally and safely.

From a theoretical perspective, the literature has drawn upon a range of approaches. Resilience theory has been widely employed to understand how these minors develop personal and social resources to cope with adversity (Becker Herbst et al., 2018). Other researchers have adopted the capability approach (Van Raemdock et al., 2022), which analyses how institutional conditions facilitate or restrict their educational autonomy. Socio-constructivist and connectivist frameworks have also been applied to examine digital inclusion and personal learning environments (Olmedo-Moreno et al., 2020, 2021; Parra-González et al., 2021; Expósito-López et al., 2019).

From an educational standpoint, empirical studies have examined the educational trajectories of UFM, highlighting both structural barriers and resilience factors that support their integration. For example, Belmonte et al. (2019) documented a lack of intercultural inclusion strategies within the Spanish education system. Similarly, Fernández-Simo et al. (2022) identified effective socio-educational interventions during the transition to adulthood. Sala (2021) explored how teachers in the UK foster a sense of belonging among unaccompanied asylum-seeking minors. These studies underscore the need to implement context-sensitive pedagogical practices and create emotionally secure learning environments.

In the same vein, Escarbajal et al. (2023) examined social perceptions of UFM in the Region of Murcia, identifying key factors for their inclusion such as inter-institutional coordination and emotional support. Olivares-García et al. (2023) emphasized the critical role of teachers in helping minors rebuild their life projects. Furthermore, Gómez-Vicario et al. (2023) conducted a systematic review covering 2012 to 2022, which highlighted the need to strengthen teachers' intercultural competencies and integrate specific curricular measures to address cultural diversity.

Other studies have developed tools to rigorously analyze this reality. Martínez-Martínez et al. (2019), Tomé-Fernández et al. (2020) and Serrano-García et al. (2024) created psychometric instruments to assess personal learning environments and psychosocial factors related to academic achievement among UFM. Parra-González et al. (2021) examined the relationship between educational level and digital competence development, emphasizing the importance of designing personalized and connective learning environments tailored to the actual needs of this population.

Given the structural limitations of the system, education professionals play a crucial role in ensuring the well-being and comprehensive development of these vulnerable minors. The implementation of effective socio-educational strategies can

mitigate the impact of bureaucratic barriers that hinder their transition to adulthood. However, professionals often face a dual challenge: on the one hand, they are committed to safeguarding the interests of minors and promoting their inclusion; on the other, they are bound by regulations that frequently obstruct these goals (Alonso-Bello et al., 2020; Delgado-Baena et al., 2022; Díez-Bermejo et al., 2021; Fernández-Simo et al., 2022; Van Raemdock et al., 2022).

In many cases, interventions do not adequately address the real needs of these minors, as they are based on approaches disconnected from their lived realities. Public policies are often formulated in social contexts dominated by hostile discourses toward migrant children, and certain governmental practices act as barriers to their transition to adulthood, ultimately impeding full inclusion (Allsopp and Chase, 2017; Barbulescu and Grugel, 2016; Deckert, 2016; Vives, 2020).

In this complex scenario, schools and education professionals emerge as key agents and spaces of intervention. They must develop strategies tailored to the specific realities of these minors, enabling those in disadvantaged areas to overcome obstacles throughout their schooling and during the transition to adulthood. As such, professional commitment is essential, often representing the only consistent human support available to this population (Humphris and Sigona, 2017; Meloni, 2019). This role remains fundamental (Humphris and Sigona, 2017), despite evidence suggesting that current social policy planning exhibits shortcomings from a socio-educational perspective (Fernández-Simo et al., 2022). Social inclusion processes are complex and idiosyncratic. If not adequately addressed, these youths risk falling into situations of social exclusion, which may lead to frustration, insecurity, and disruptions in their life trajectories (Alonso-Bello et al., 2020; Arnau-Sabatés and Gilligan, 2015).

Therefore, this group requires the guidance of professionals (teachers, social educators, psychologists, and others) to better understand themselves, identify their strengths, and explore available educational and professional opportunities. Achieving their goals and fostering integration in the host country largely depends on constructing, developing, and managing their personal learning environments, which are crucial to promoting autonomy and inclusion (Parra-González et al., 2021). It is essential that professionals support UFM in developing a sense of belonging within the spaces they inhabit daily, as this promotes academic achievement, self-confidence, and the formation of strong support networks (Sala, 2021).

Despite the abundance of conceptual and empirical contributions, there remains a lack of critical connection between the theoretical frameworks employed. Their potential complementarities, tensions, or intersections are rarely examined, which limits their capacity to coherently inform both public policy and educational practice. This study addresses this gap through a bibliometric analysis aimed at identifying the most influential authors, institutions, and both dominant and emerging theoretical paradigms in the field of UFM and education.

In light of the above, the general aim of this study is to examine the scientific literature related to UFM in the field of education, in order to understand the evolution of academic knowledge and provide a solid foundation for future research. The following specific objectives (SO) are proposed:

SO1: To explore the existing scientific production on UFM in education from an international perspective.

SO2: To analyze the most prolific authors and research groups in this field at the international level.

SO3: To identify the most influential institutions in this area of study.

SO4: To determine the academic journals that most frequently publish research on this topic and assess their quality.

SO5: To examine the key terms currently used in the educational field in relation to this population.

This leads to the following research question guiding the study: *What is the current state of international scientific production on unaccompanied foreign minors in the field of education?*

2 Materials and methods

This research is based on a bibliometric analysis, which allows us to examine the existing international scientific production on UFM in the field of education. This methodological approach, widely recognized for its ability to identify patterns and trends in the scientific literature (Aria and Cuccurullo, 2017), is applied through the use of various indicators, such as the number of publications per year, the identification of the most prolific authors and working groups (Van Eck and Waltman, 2010), the most influential institutions in the field, the journals that publish the most research related to this topic, among others. In the context of education and migration, recent studies (Suárez-Orozco et al., 2019; Torrado et al., 2022) have highlighted the importance of analyzing academic production to better understand the challenges and opportunities faced by UFM in education.

2.1 Sampling

This study employed purposive sampling to select the scientific literature retrieved from the Scopus and Web of Science (WoS) databases, which are regarded as international benchmarks in academic indexing. The selection was carried out in accordance with a pre-established search strategy, closely aligned with the specific objectives of the research (Table 1). As a result of the initial process, 493 documents were retrieved (Scopus = 407, WOS = 86). Subsequently, two screening phases were carried out applying the established inclusion and exclusion criteria. In the first phase, duplicate documents ($n = 30$) and those that did not correspond to scientific articles ($n = 1$) were eliminated. In the second phase, articles that were not related to the subject of the study ($n = 389$) and those that did not refer to the field of education ($n = 62$) were excluded, thus obtaining a final sample of 23 scientific articles for the bibliometric analysis (Figure 1).

2.2 Instruments

In this research work, various instruments were used for the collection, organization and analysis of data. High impact academic databases such as Scopus and WOS were used to extract the scientific production on the subject. Subsequently, bibliographic references were managed using Zotero software version 6.0.37, which allowed us to organize the documents, structure the citations and apply the screening criteria to guarantee the relevance and quality of the selected studies. Data analysis was carried out using VOSviewer version 1.6.20. software, used for the construction of bibliometric networks according to the specific objectives of the study (SO2, SO3, SO5). Next, Microsoft Excel version 16.78. software was used as a complementary tool for the elaboration of graphs, data management and the implementation of filtering, sorting and quantitative analysis procedures (SO1, SO4).

2.3 Procedure and data analysis

This study was structured in three main phases. The first phase focused on defining the inclusion (IC) and exclusion (EC) criteria, which were established to guarantee the relevance and quality of the selected scientific production. The inclusion criteria were as follows:

- IC1, scientific production aimed at UFM
- IC2, scientific production oriented to the educational field.
- IC3, the selected documents were research articles.
- IC4, the texts were written in English or Spanish.

On the other hand, the exclusion criteria refer to: EC1, studies dealing with topics other than the UFM population; EC2, research unrelated to the educational field; EC3, texts written in languages other than English or Spanish; and EC4, documents that were not research articles, such as conference proceedings, book chapters or conferences.

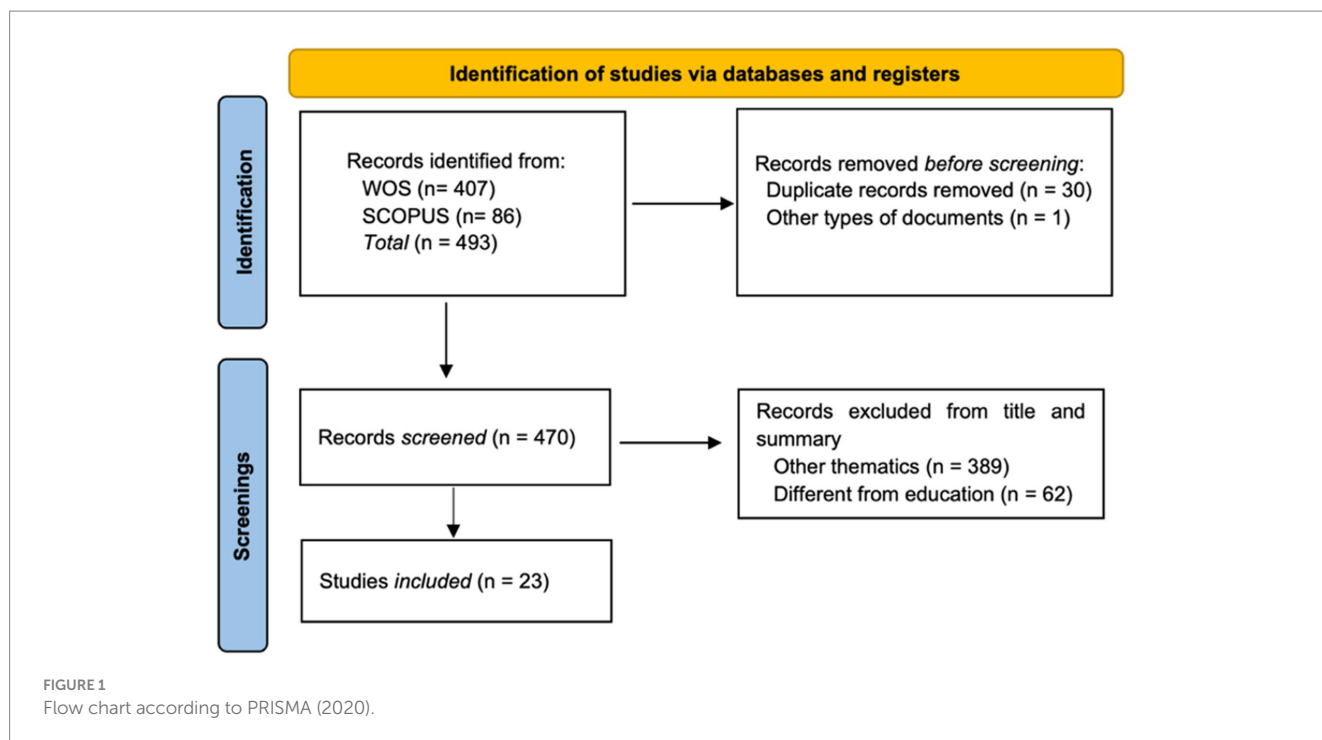
This delimitation made it possible to establish a solid search strategy aligned with the objectives of the study:

The documents obtained from the different databases were exported in. RIS format and subsequently managed using Zotero software, where the second phase of the study, called document filtering and screening, was initiated. This phase included two screens, which were carried out through a manual, double-blind, peer-review process:

- In the first screening, duplicate documents, those written in languages other than English or Spanish (EC3), as well as those

TABLE 1 Search strategy.

Population (OR)		Sphere (OR)		Other filters (AND)
Menores extranjeros no acompañados	AND	Educación	AND	Type of documents: Article
MENA		Education		Language: inglés, español
Niños, niñas, adolescentes migrantes no acompañadas				
NNAMNA				
Unaccompanied foreign minors				
UFM				



that did not correspond to the selected document type (EC4) were eliminated.

- In the second screening, documents whose subject matter did not directly address the object of study (UFM) (EC1) or which were not linked to the field of education (EC2) were excluded.

This filtering process ensured the relevance and quality of the documents selected for the bibliometric analysis. This was followed by the third phase entitled construction of the results, in which the bibliometric networks referring to the most prolific authors and institutions (SO2, SO3), as well as which aspects are worked on with UFM in the educational field from an international perspective (SO5) were carried out using VosViewer. Furthermore, visual graphs (SO1) and tables (SO4) were created using Excel software.

3 Results

This section presents the results obtained, organized according to the five specific objectives set out in this study.

3.1 To explore the existing scientific production on UFM in education from an international perspective

International scientific production on UFM in education is limited, with a total of 23 publications to date (Figure 2). The first research in this field was recorded in 2011 ($n = 1$), followed by a period with no publications until 2018 ($n = 1$). From 2019 onwards, a progressive increase in scientific production is evident, in 2019 ($n = 3$)

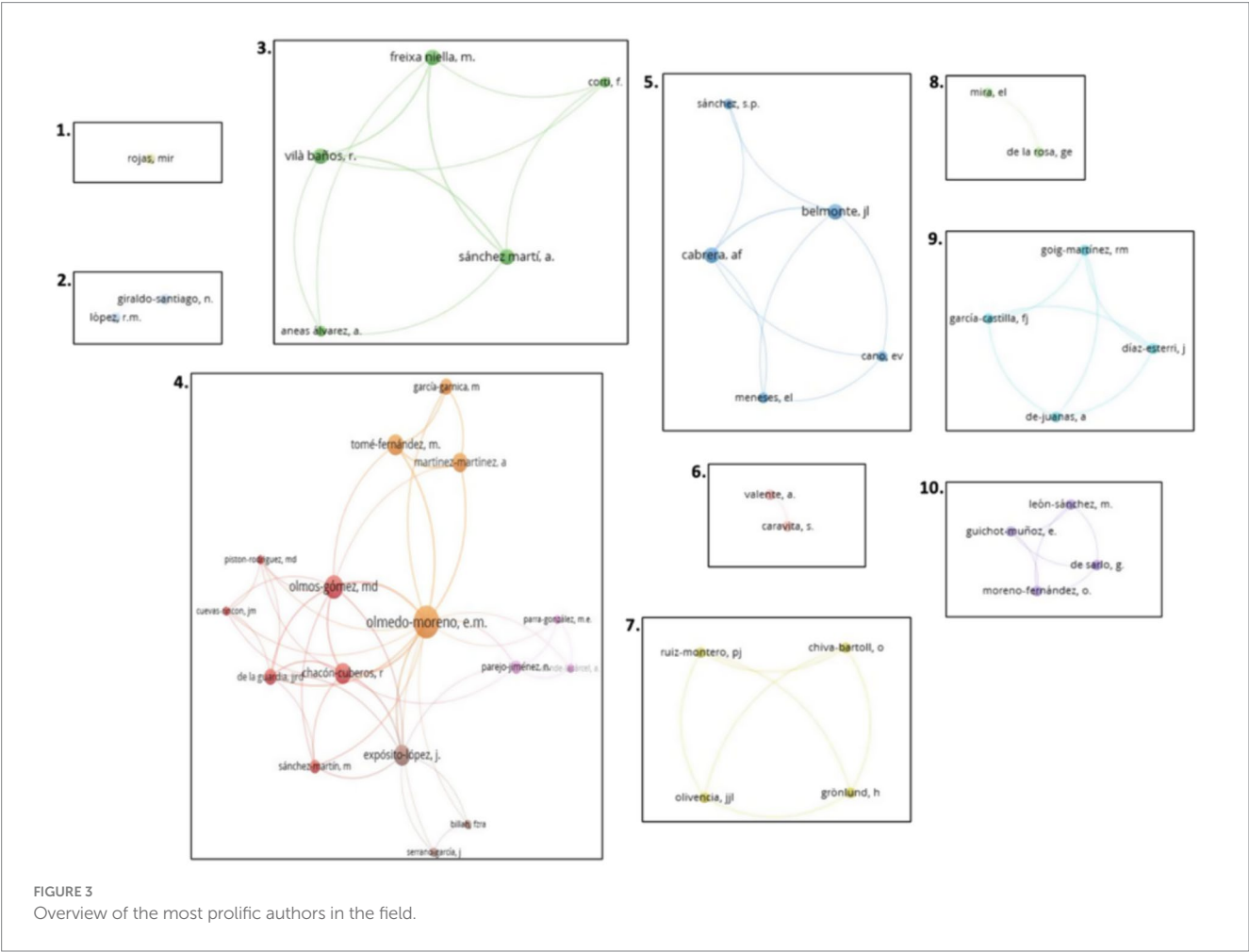
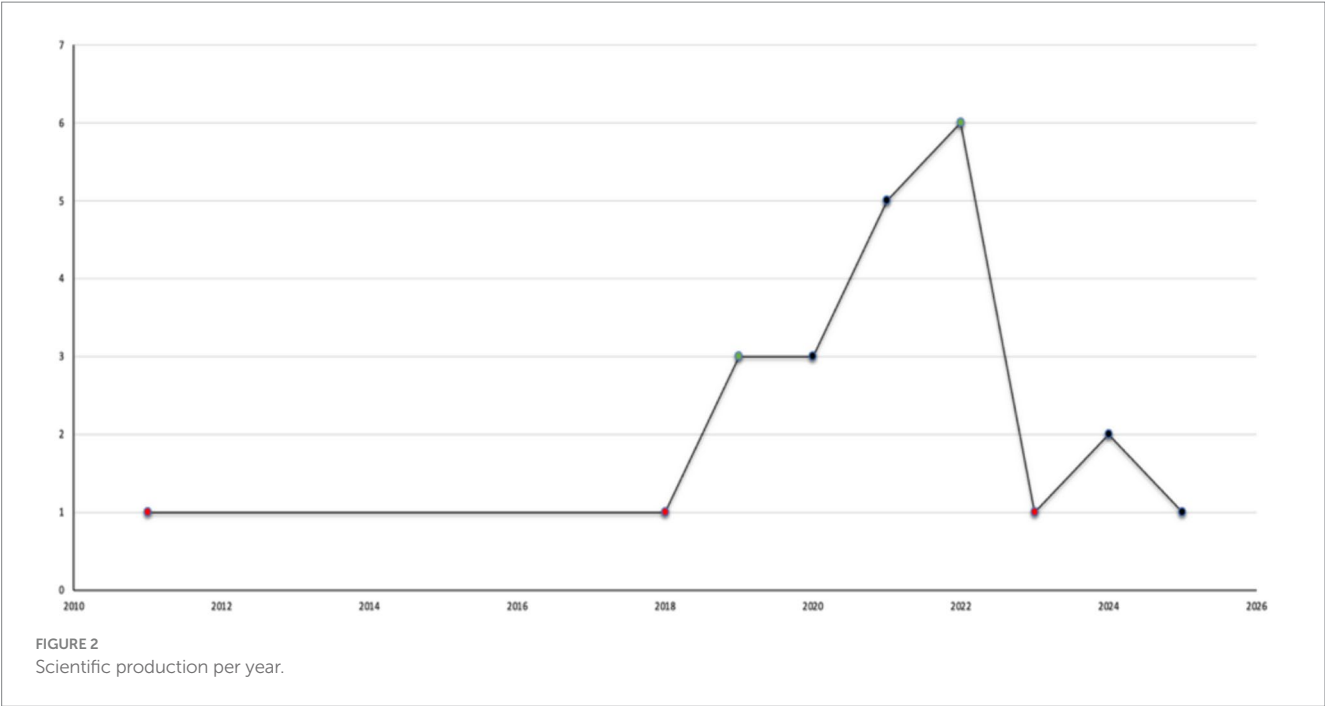
and 2020 ($n = 3$). This upward trend intensifies in 2021 ($n = 5$) and peaks in 2022 ($n = 6$), suggesting a growing academic interest in this topic. However, after this peak in 2022, scientific production experiences a significant decrease in 2023 ($n = 1$), followed by a slight stabilization in 2024 ($n = 2$) and 2025 ($n = 1$).

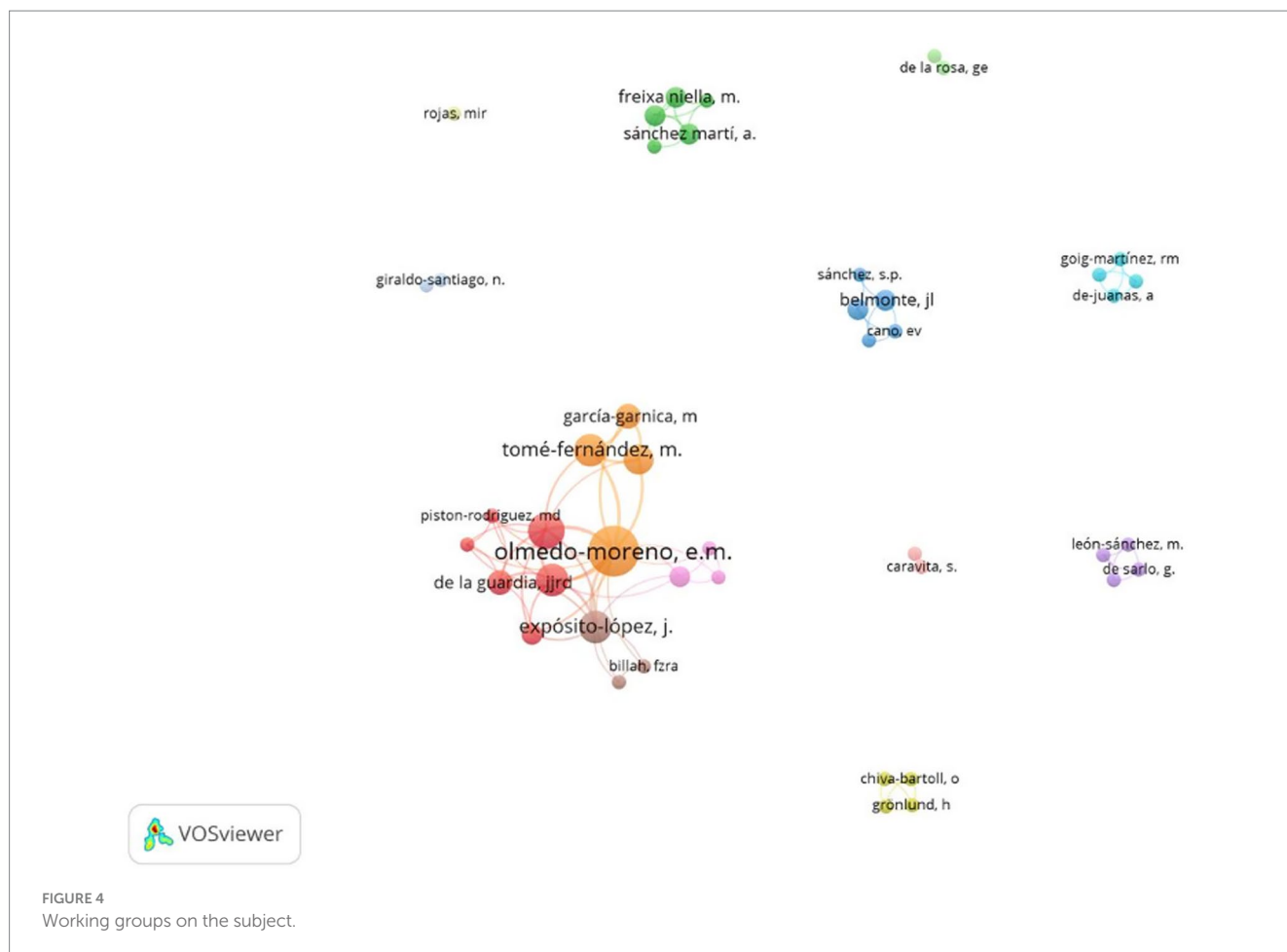
These results reveal three main patterns in the international scientific production on UFM in the field of education. First, there is a low level of scientific production between 2011 and 2018. Then, between 2019 and 2022, there is a progressive increase in the number of publications. Finally, from 2023 to the present, a decrease in scientific production is identified, suggesting a possible change in research trends, funding limitations or the diversification of approaches within this field of study.

3.2 To analyze the most prolific authors and WGs in this field from an international perspective

Figure 3 provides an overview of the most prolific authors, as well as the existing working groups (WGs) on this topic. Each of the authors are represented by nodes and the relationships established between the different authors through clusters or WGs.

Of the 45 researchers who have published UFM studies in the field of education, 11.11% ($n = 5$) have published five or more studies, reflected by the size of the nodes. Among them, Olmedo-Moreno ($n = 12$), Olmos-Gómez ($n = 6$), Expósito-López ($n = 5$), Tomé-Fernández ($n = 5$), Chacón-Cuberos ($n = 5$) are the most significant contributors to the development of scientific knowledge in this field. With 20% ($n = 9$), they are followed by Martínez-Martínez ($n = 4$), De la Guardia ($n = 3$), García-Garnica ($n = 3$), Sánchez-Martín ($n = 2$), Parejo-Jiménez ($n = 2$), Belmonte ($n = 2$), Sánchez-Martí





($n = 2$), Vilà-Baños ($n = 2$), and Cabrera ($n = 2$). The remaining 68.89 ($n = 31$) have published only one article.

In addition, different WGs are identified, represented in Figure 4 by different colors. In total, 10 groups can be distinguished: WG1: Rojas; WG2: Giraldo-Santiago and López; WG3: Freixa-Niella, Corti, Vilà-Baños, Sánchez-Martí and Aneas-Álvarez; GT4: Broken down into four sub-groups: WG4.1. García-Garnica, Tomé-Fernández, Martínez-Martínez and Olmedo-Moreno., WG4.2. Pistón-Rodríguez, Cuevas-Rincón, Olmos-Gómez, De la Guardia, Sánchez-Martín, Chacón-Cuberos and Olmedo-Moreno., WG4.3. Parra-González, Parejo-Jiménez, Conde-Lacárcel and Olmedo-Moreno., WG4.4. Serrano-García, Billah, Expósito-López and Olmedo-Moreno; WG5: Sánchez, Belmonte, Cabrera, Cano and Meneses; WG6: Valente and Caravita; WG7: Ruíz-Montero, Chiva-Bartoll, Olivencia and Gronlund; WG8: Mira and De la Rosa; WG9: Goig-Martínez, García-Castilla, Díaz-Esterri and De Juanas y; WG10: León-Sánchez, Guichot-Muñoz, De Sarlo and Moreno-Fernández.

The distribution of scientific production reveals the existence of weak collaborative networks (WG1, WG2, WG3, WG5, WG6, WG7, WG8, WG9, WG10), with the exception of WG3, which stands out as a more structured and therefore consolidated group, characterized by the formation of multiple interconnected clusters among its working subgroups (see Figure 3). Within WG3, the researcher Olmedo-Moreno emerges as a central node in these collaborative networks, playing a key role in the articulation and cohesion of the different subgroups. In addition, she is identified as the researcher with the

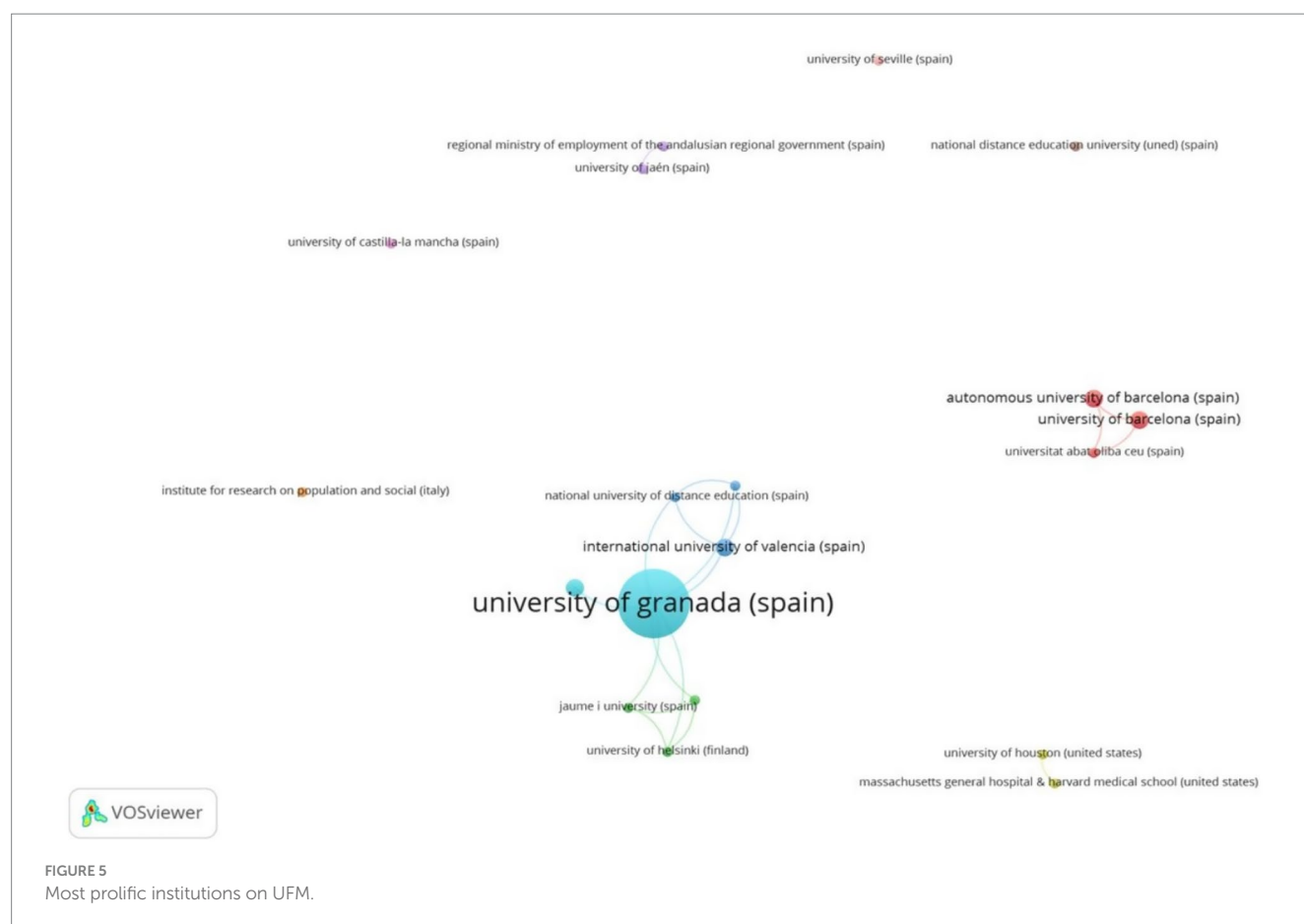
longest trajectory and specialization in the subject, positioning her as a reference within the field, as well as reinforcing her role in the consolidation and dissemination of knowledge in this area of research.

3.3 To identify the most influential institutions in this field of study

In line with SE2, Figure 5 shows that, of the 19 institutions analyzed, the University of Granada (Spain) is the most influential in working with UFM in the educational field, as 15 authors have contributed publications on this topic (40.54%). It is followed by the International University of Valencia, the Autonomous University of Barcelona, the University of Barcelona and the University of Murcia, each with the participation of 2 authors (5.51%). On the other hand, the remaining institutions are considered less influential, with only 1 author (2.70%).

3.4 To determine the academic journals that most frequently publish research related to this topic and their quality index

Among the total number of scientific articles included in this bibliometric analysis ($N = 23$), these are distributed in 19 scientific journals belonging to different countries and impact indices (Table 2).



The journals with the highest number of publications in this area are the International Journal of Environmental Research and Public Health and Research and Public Health ($n = 2$, 10.52%, respectively). In contrast, the remaining journals ($n = 17$, 89.47%) have published only one article each on this topic, which shows a dispersion of scientific production in multiple journals.

Scientific production is mostly concentrated in journals indexed in Q1 and Q2 quartiles ($n = 10$, 58.8%), reflecting the presence of high impact journals such as the European Journal of Social Work and European Physical Education Review, both classified in Q1, as well as the International Journal of Environmental Research and Public Health and Sustainability, classified in Q2. However, articles have also been identified in lower impact journals, ranked Q3, Q4 ($n = 6$, 35.3%) and other categories ($n = 3$, 17.6%).

In terms of geographical distribution, most of the journals belong to Switzerland ($n = 4$, 3.53%), the United Kingdom ($n = 5$, 29.41%) and Spain ($n = 4$, 23.53%), suggesting that scientific production on this topic is concentrated in these countries. However, the remaining journals such as the United States, Italy, the Netherlands, Turkey, Romania and Venezuela have published on this topic only once.

3.5 To examine the main terms that are being worked on in the educational field in relation to the target population

Figure 6 presents a bibliometric network of key terms drawn from the international scientific literature on unaccompanied foreign

minors (UFM) in the field of education. The co-occurrence analysis reveals the existence of several thematic clusters, each corresponding to distinct yet interrelated conceptual cores.

The first cluster focuses on the development of academic and professional competences, with prominent terms including future work skills, training, academic self-efficacy, motivation, and performance. This cluster reflects a line of research that emphasizes the preparation of young migrants—particularly in the Spanish context—for their entry into the labour market and progression through educational pathways, addressing both personal and institutional variables.

A second cluster revolves around psychoeducational constructs such as self-concept, perception, and personal learning environment. These terms frequently appear in studies examining the impact of forced migration on the personal and emotional development of migrant, refugee, and asylum-seeking children and adolescents. They are also linked to approaches that underline the significance of resilience, personal autonomy, and school adaptation processes as key to understanding their educational trajectories in host contexts.

The third cluster is structured around the theme of educational inclusion, incorporating terms such as experiences, strategies, social inclusion, and inclusive education. This semantic network highlights both the lived experiences of migrant pupils within school settings and the pedagogical, institutional, and community-based strategies implemented to foster more equitable educational environments.

The interconnections among these clusters reflect an emerging field of study that seeks to integrate individual dimensions (e.g.,

TABLE 2 Journals and quality index.

Journals	Number of articles	Country	Quartiles	H-Index	SJR (2023)	Total cites
International Journal of Environmental Research and Public Health	3	Switzerland	Q2	198	0.808	158,486
Sustainability	3	Switzerland	Q2	169	0.672	181,393
Bordon: Revista de Pedagogía	1	Spain	Q3	19	0.333	134
Education Policy Analysis Archives	1	United States	Q3	58	0.313	450
European Journal of Social Work	1	United Kingdom	Q1	34	0.569	554
European Physical Education Review	1	United Kingdom	Q1	55	1.136	732
Frontiers in Psychology	1	Switzerland	Q2	184	0.8	63,232
International Journal of Intercultural Relations	1	United Kingdom	Q2	102	0.864	1,035
International Journal of Social Welfare	1	United Kingdom	Q2	57	0.657	309
Italian Journal of Sociology of Education	1	Italy	Q4	7	0.186	48
JOURNAL of International Migration and Integration	1	Netherlands	Q1	36	0.537	511
Journal of Refugee Studies	1	United Kingdom	Q1	72	0.974	874
Participatory Educational Research	1	Turkey	Q3	11	0.252	323
Revista de Cercetare si Interventie Sociala	1	Romania	Q4	17	0.183	145
Revista de Educación Inclusiva	1	Spain	Otro	–	–	–
Revista de Pedagogía	1	Venezuela	Q4	8	0.103	5
REVISTA sobre la Infancia y la Adolescencia	1	Spain	Otro	–	–	–
Social Sciences	1	Switzerland	Q2	42	0.502	2,722
Vivat Academia	1	Spain	Otro	–	–	–

motivation, self-concept), institutional aspects (e.g., teacher training, inclusion strategies), and broader social factors (e.g., integration, life skills) in relation to the inclusion of UFM. This interrelation suggests that the most recent studies are moving toward a holistic understanding of educational processes, recognizing that inclusion cannot be approached in isolation, but must be closely linked to emotional well-being, structural equity, and opportunities for future development.

4 Discussion

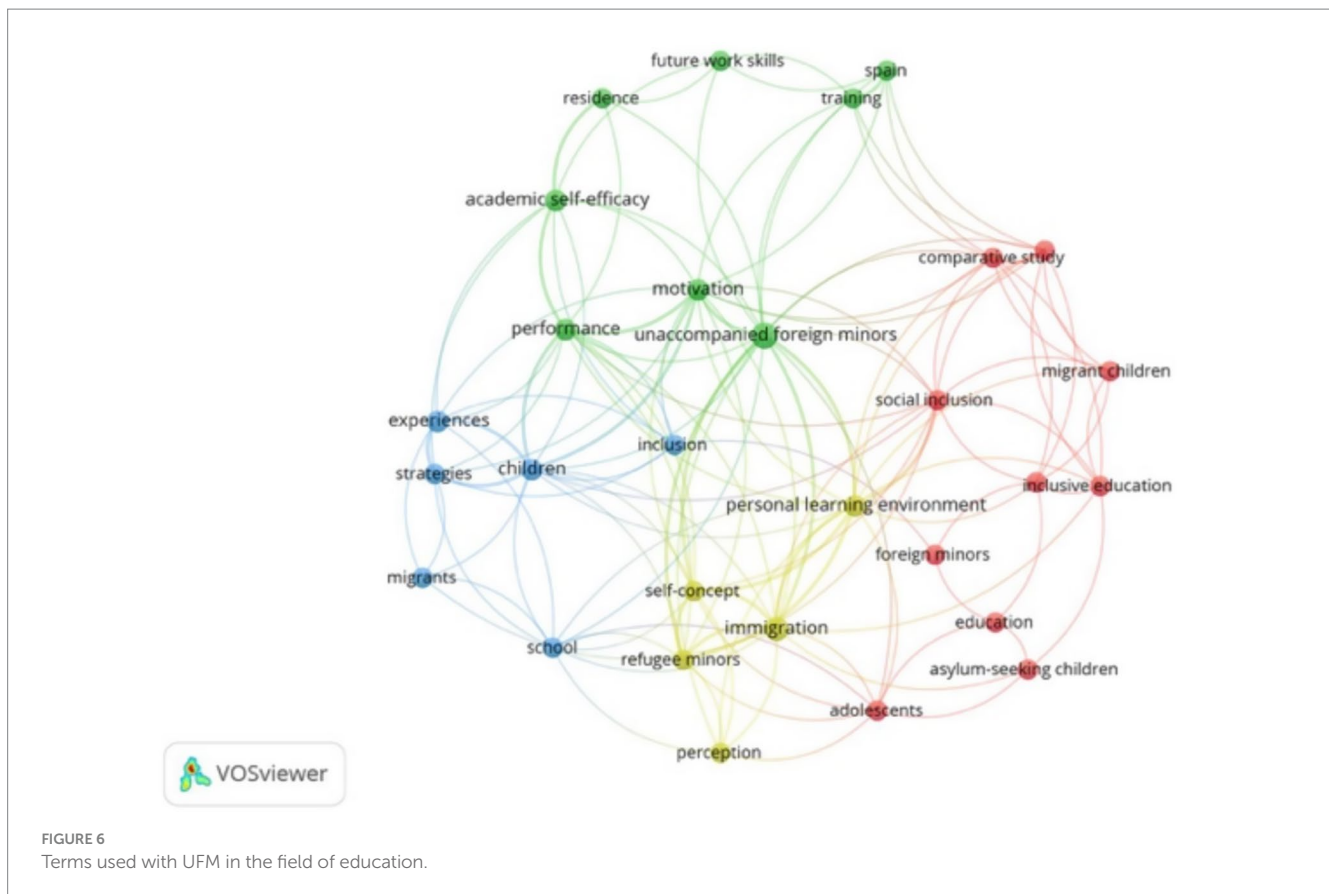
The results reveal that scientific production on UFM in the educational sphere remains incipient, highlighting a notable epistemic and social invisibilization of this population, despite their growing presence in European school contexts (Becker Herbst et al., 2018; United Nations, 2025). This gap between the scale of the phenomenon and its scarce representation in academic literature has already been pointed out by authors such as Escarbajal et al. (2023), who warn that academic discourse does not always align with the real challenges faced by professionals in educational and social contexts. Similar tensions are evident in other European contexts such as Italy, where institutional fragilities coexist with the capacity for autonomy developed by minors during their transition through the system (Argento et al., 2024).

The concentration of authors and institutions identified in this study, consistent with Lotka's Law, suggests that the field remains at an early stage of consolidation. However, such concentration also implies

a limited diversity of perspectives and experiences, which restricts a plural understanding of the migratory phenomenon. As Fernández-Simo et al. (2022) note, it is necessary to foster interdisciplinary and collaborative approaches to develop effective educational responses during the transition to adulthood. The low level of collaboration among research groups, as evidenced by this bibliometric analysis, may hinder these efforts and diminish the transformative potential of scientific knowledge.

Moreover, the application of Bradford's Law indicates that research on UFM in the educational domain is channeled through a small number of academic journals, many of which are high-impact (Q1 and Q2), thereby ensuring the methodological and theoretical quality of the studies, as observed in the systematic review by Gómez-Vicario et al. (2023). However, such academic excellence does not always translate into practical usefulness. For instance, Belmonte et al. (2019) highlighted the lack of intercultural inclusion strategies implemented in educational centres, reflecting a mismatch between scientific output and the application of public policies. Similar conclusions can be found in Quiroga Raimúndez et al. (2023), who analyzed the evolution and protection models for UFM in Catalonia, emphasizing the gaps between legal frameworks and their actual implementation in the educational field.

From a thematic perspective, the analyzed corpus shows a predominance of studies focused on the development of digital competencies (Parra-González et al., 2021a; Parra-González et al., 2021b), the construction of a sense of belonging in school contexts (Sala, 2021), resilience in the transition to adulthood (Delgado-Baena et al., 2022), as well as the importance of emotional and professional



support from teaching staff (Olivares-García et al., 2023). These lines of research are essential for understanding the protective factors that influence the life and educational trajectories of UFM.

Nevertheless, significant gaps persist, as pointed out by Escarbajal et al. (2023), given that social perceptions of UFM continue to be shaped by discourses of prejudice and criminalisation, which negatively impact their social integration. Likewise, Allsopp and Chase (2017) and Deckert (2016) warn that restrictive reception policies reproduce conditions of structural exclusion by placing these minors in contexts of legal, economic and emotional vulnerability. In the same vein, Vives (2020) argues that institutional practices often function as mechanisms of control that hinder UFM's autonomy during their transition to adulthood. These findings are in line with those of Arrufat-Cardava and Sanz-Ponce (2020), who underline the persistent obstacles to effectively guaranteeing the right to education for these migrant minors, particularly when legal recognition does not translate into accessible and inclusive educational opportunities.

The results of the present study also highlight a weak critical connection between the theoretical frameworks employed. The fragmentation of approaches—resilience (Becker Herbst et al., 2018), the capabilities approach (Van Raemdock et al., 2022), socioconstructivism and connectivism (Olmedo-Moreno et al., 2020, 2021)—limits the capacity to generate a holistic view of these minors' educational processes. As Fernández-Simo et al. (2022) point out, this theoretical disconnection affects both the planning of social policies and the coherence of socio-educational interventions. In this regard, Bravo and Santos-Gonzalez (2017) argue that the psychosocial and

educational needs of asylum-seeking minors remain inadequately addressed in normative frameworks, thereby requiring a more comprehensive and contextualized understanding of vulnerability.

In addition, rigorous analytical tools have been developed, such as psychometric scales on personal learning environments and psychosocial factors (Martínez-Martínez et al., 2019; Tomé-Fernández et al., 2020), which must be complemented by more participatory and qualitative methodologies that allow for the direct voices of the minors themselves to be heard. Without their active participation, there is a risk of designing decontextualized or paternalistic interventions, as warned by Alonso-Bello et al. (2020) and Arnau-Sabatés and Gilligan (2015), who stress that social exclusion affects not only material conditions but also symbolic and subjective dimensions. This concern is shared by Cónsola-Párraga (2016), who insists on the need for educational responses to align with the expectations and lived experiences of UFM, through socio-educational interventions based on proximity.

Finally, as highlighted by Humphris and Sigona (2017) and Meloni (2019), the role of teachers and other education professionals is crucial to ensuring comprehensive support for these minors. Professional commitment must not be limited to instrumental or bureaucratic functions but should instead be directed toward the construction of meaningful relationships, the recognition of otherness, and the creation of safe environments. In this regard, Sala (2021) emphasizes the importance of cultivating a sense of belonging as a decisive factor for UFM's educational success and emotional well-being. This need for structural and sustained support is reinforced by the work of Rodríguez-Rodríguez and

Pérez-Montesdeoca (2022), who advocate for international comparisons to identify good practices in residential care that can inform educational policies.

5 Conclusion

The bibliometric analysis conducted allows for the extraction of four key conclusions:

1st Conclusion. The scientific literature on UFM in the educational field remains limited, underscoring the need for both the European Higher Education Area and the research community to expand their interest in addressing the challenges faced by this population, which currently receives little visibility. This literary gap highlights the multiple shortcomings, challenges, and needs that these minors encounter within the education systems of host countries.

2nd Conclusion. The presence of specialized authors in this area is scarce, with Olmedo-Moreno emerging as the most prominent and specialized figure in this line of research, a finding corroborated by Lotka's Law (Lotka, 1926). Moreover, among the ten identified working groups, only WG4 demonstrates a high degree of interrelation and, consequently, consolidation in research on this topic. Additionally, this group is linked to the most influential institution in this field, the University of Granada.

3rd Conclusion. No specialized journals have been identified as central repositories of scientific output on immigration and education, specifically concerning UFM and education. This finding aligns with the predictions of Bradford's Law (1934).

4th Conclusion. The scarcity of research on UFM in the educational field highlights the urgency of deepening the analysis of the realities experienced by these minors. In this regard, advancing research is essential to promoting their educational, social, and personal inclusion, thereby contributing to reducing social inequalities (SDG 10) and enhancing the quality of education for this group (SDG 4) (United Nations, 2015).

5.1 Limitations

This study presents three main limitations. The first is related to the screening process, which required a considerable investment of time as it was conducted manually. In particular, the second screening involved a double-blind review by two researchers, who evaluated the documents based on their titles and abstracts to determine whether they focused on the educational field and should therefore be included in the final sample for the bibliometric analysis in this research study. Although rigorous, this procedure limited the efficiency of the process. The second limitation concerns the identification of identical terminology, specifically the acronym *UFM*, which is widely used to refer to the *Middle East and North Africa* region. Similarly, the acronym *UFM* presented ambiguities, as it is employed in different contexts, such as the *Francisco Marroquín University* or the English expression *Union for the Mediterranean*, generating noise in the identification of relevant studies. Finally, the construction of the bibliometric network of authors using VOSviewer presented limitations related to name duplication. On some occasions, authors' names appeared incomplete, which required time and a thorough manual review to

correctly unify the information and avoid biases in the representation of academic collaboration.

5.2 Prospective and future lines of research

Based on the results obtained, several future lines of research have been identified that could significantly contribute to addressing the existing gaps in the international scientific literature concerning UFM within the educational sphere. In the first instance, it is essential to delve deeper into the analysis of primary and secondary school teachers' perceptions of this group. Beyond merely identifying stereotypes and prejudices, it is crucial to understand how these social representations influence everyday pedagogical practices, classroom interactions, and, ultimately, the educational trajectories of these minors.

This perspective entails the design and implementation of both initial and ongoing teacher training programs that incorporate an intercultural, social justice, and human rights-based approach. Such programs must equip teachers with the conceptual and methodological tools needed to address diversity in their schools and classrooms critically and inclusively, thereby fostering educational environments that are sensitive to vulnerability. In this regard, it is proposed that compulsory training modules on intercultural education and the care of pupils in situations of vulnerability be included in initial teacher education curricula. Furthermore, the structural incorporation of specialized professional roles, such as intercultural mediators, into educational institutions is recommended. Similarly, the implementation of academic tutoring and socio-emotional support programs from a community-based perspective, specifically aimed at UFM, is considered appropriate, as these initiatives can strengthen their sense of belonging and promote holistic development.

Moreover, the educational and social inclusion of UFM in the twenty-first century must be understood as a complex and multidimensional process that transcends mere access to the educational system. Therefore, it is essential to explore the structural conditions that affect their integration, with particular attention to their social and digital competences, which constitute key dimensions of their personal development, active participation in the host society, and future socio-occupational inclusion. The digital divide, understood as the lack of access to devices, connectivity, or critical digital literacy, represents an additional barrier that exacerbates existing inequalities and restricts educational opportunities for this population. Consequently, it is recommended that equitable access to technological resources be guaranteed in schools, alongside the provision of specific training in basic and critical digital competences, ensuring that these tools effectively support their learning and inclusion. To this end, it is necessary to establish systems for the collection and analysis of disaggregated data through the creation of territorial observatories that can diagnose the real needs of these minors and underpin public policies with empirical evidence.

Furthermore, it is emphasized that public policies must move away from assistentialist approaches—which treat minors as passive recipients of aid—and from fragmented interventions, advancing instead toward normative and operational frameworks of an intersectoral nature. It is imperative to articulate the educational, social, and child protection systems effectively, ensuring the

coordination of actions among public administrations, schools, third-sector organizations, and local communities. Only through a comprehensive approach, grounded in human rights and sustained by coherent and stable inter-institutional collaboration, will it be possible to make progress toward more just, equitable, and inclusive educational systems that appropriately acknowledge and respond to the specific needs of UFM and other vulnerable groups.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

JS-G: Data curation, Formal analysis, Investigation, Methodology, Project administration, Software, Visualization, Writing – original draft, Writing – review & editing. FR-A: Conceptualization, Investigation, Project administration, Resources, Visualization, Writing – original draft. JE-L: Investigation, Project administration, Resources, Supervision, Visualization, Writing – review & editing. EO-M: Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Visualization, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The authors declare that no Gen AI was used in the creation of this manuscript.

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