

Mapping inclusive physical education research in Morocco and the MENA region: A bibliometric analysis (1994-2025)

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Abstract.

Problem Statement : Inclusive physical education (IPE) has expanded internationally since the 1994 UNESCO Salamanca Statement, yet no bibliometric map exists for Morocco or the wider Middle East and North Africa (MENA) region, despite advanced legislative frameworks for disability inclusion. **Approach :** Scopus and Web of Science were searched in 2026 using a Boolean string combining inclusive and adapted physical education terms with disability-related terms, filtered to MENA-affiliated records alongside an unfiltered worldwide comparator for 1994-2025, with analyses in R (bibliometrix) and VOSviewer. **Purpose :** The purpose was to quantify MENA production relative to worldwide output, characterize its structure, and position Morocco within it. **Results :** The MENA-filtered search returned 19 documents against a worldwide corpus of 431 (4.4% share). The earliest MENA record dates to 2012, followed by a seven-year silence before sustained output began in 2020, peaking at 15.6% of world share in 2021. Saudi Arabia (10 documents) and Morocco (6) account for 84.2% of the corpus, led by one author (8 documents) and a Moroccan trio (6). International collaboration is limited to two disconnected bilateral ties (31.6%). Fourteen documents (73.7%) use quantitative designs. Saudi studies rely on validated Arabic instruments, a step largely absent in Morocco, whose sole contribution is the corpus's only randomized controlled trial. **Conclusions :** MENA IPE research is sparse, narrow, and geographically concentrated, sustained by two teams and a shared ceiling of first-generation psychometrics. This analysis supplies the field's first quantitative baseline and an actionable agenda anchored in cross-cultural instrument validation, mixed-methods diversification, and a dedicated intra-regional research network.

Key Words: adapted physical education, disability inclusion, science mapping, research collaboration, students with disabilities, Middle East and North Africa.

Introduction

Inclusive physical education (IPE) is now understood not merely as a pedagogical technique but as an expression of a fundamental right: every child, regardless of disability status, should participate meaningfully in physical activity alongside non-disabled peers (UNESCO, 1994; Sherrill, 2004). UNESCO's 1994 Salamanca Statement established this as a global policy priority. Translating the right into classroom practice has proven persistently difficult. International literature documents recurring barriers: insufficient teacher preparation in adapted pedagogy (Hutzler & Sherrill, 2007), unsupportive teacher attitudes toward inclusion (Block & Obrusnikova, 2007), inadequate curricular adaptation (Sherrill, 2004), and chronic shortages of adapted equipment and support personnel. These barriers compound one another: a teacher with little training and no material support is unlikely to develop the self-efficacy the literature links to successful inclusion, regardless of how progressive the legislative framework is. Understanding IPE therefore requires attention to the accumulated empirical evidence, or its absence, documenting whether policy mandates are realized in practice.

The global evidence base on IPE has grown considerably since Salamanca. Reviews across the following decade already documented accumulating literature on teacher attitudes, curricular adaptation, and student outcomes (Block & Obrusnikova, 2007), a trajectory a 2022 meta-analysis confirmed was still accelerating for teacher attitudes specifically, though improved attitudes do not always translate into sustained classroom behavior change (Tarantino, Makopoulou, & Neville, 2022). This growth has attracted bibliometric attention in its own right. Supriyatni et al. (2025) mapped 109 Scopus-indexed documents on physical education in inclusive schools worldwide for 2014-2024, identifying Germany, Australia, and the United States as leading producers and confirming that teacher attitudes, self-efficacy, and instructional adaptation dominate the field's thematic clusters. A parallel bibliometric review of adapted physical activity research for individuals with intellectual disabilities (1993-2025) found the field concentrated among high-income, English-speaking research systems, with little Global South representation (Yılmaz & Han, 2026). Together, these mapping exercises confirm that IPE research is now a mature field, but they share a blind spot: neither disaggregates output from

the Middle East and North Africa, leaving unclear whether the region's disability and education reform agendas are supported by a corresponding literature. This is the gap the present analysis addresses.

This absence is difficult to reconcile with the region's pace of legislative reform. Morocco's Conseil Supérieur de l'Éducation, de la Formation et de la Recherche Scientifique set inclusive education as a strategic priority in its 2015-2030 reform vision (CSEFRS, 2015), given legislative force by the 2019 framework law on education (Royaume du Maroc, 2019), which mandates progressive integration of students with disabilities and requires teacher-training institutions to build corresponding capacity. A 2019 national assessment found persistent gaps between this ambition and conditions on the ground (CSEFRS, 2019). Saudi Arabia shows a comparable dynamic: its Vision 2030 framework integrates inclusive educational access and disability participation as national development priorities (Kingdom of Saudi Arabia, 2016), and a recent bibliometric analysis documents rapid growth in related themes alongside persistent thematic and geographic concentration (Kandeel, Morsy, Al Khodair, & Alhojaily, 2025). Both countries are states parties to the UN Convention on the Rights of Persons with Disabilities, whose Article 24 requires an inclusive education system at all levels (United Nations, 2006). Both national programs treat inclusive education, and inclusive physical education as one of its most visible practices, as a policy priority.

This juxtaposition of ambitious legislative commitment and an undocumented scientific literature constitutes what this paper terms a policy-research asymmetry, the central justification for the present analysis. Without a documented empirical base, it is not possible to know whether MENA IPE policies are implemented as intended, what locally specific barriers teachers and students encounter, whether instruments validated in North American, European, or East Asian contexts are appropriate for MENA classrooms, or how Morocco, Saudi Arabia, and neighboring countries might learn from one another rather than developing in isolation. Absent such evidence, ambitious legislation risks remaining symbolic rather than substantively evaluable.

A baseline bibliometric map is the necessary first step. Rather than assessing the content or quality of individual studies as a systematic review would, a bibliometric approach identifies the field's structural architecture: which authors, teams, and institutions produce this knowledge, which countries, journals, and thematic clusters structure the literature, and which methodological traditions and instruments characterize its output. This has direct practical value: it helps funders and administrators identify where capacity exists and must be built, helps isolated research teams find collaborators with complementary expertise, and exposes methodological gaps, such as the absence of culturally validated instruments or mixed-methods designs, that must be addressed before locally grounded interventions can be developed with confidence.

The paper's contribution is threefold: it is the first bibliometric analysis isolating MENA-region IPE output, it reveals the field's temporal lag, geographic concentration, and methodological ceiling, and it supplies a quantified baseline for future research.

Five research questions guide the investigation. RQ1 (temporal trajectory): how has MENA production evolved relative to worldwide production, and when did it begin? RQ2 (geographic distribution): how is MENA production distributed across countries, and where does Morocco stand? RQ3 (thematic structure): what are the field's dominant thematic clusters? RQ4 (social and institutional architecture): which authors and institutions structure the field? RQ5 (methodological profile): what is the structure of international collaboration, and what study designs and instruments characterize the corpus?

Material & methods

Study design

This is a descriptive and relational bibliometric analysis rather than a systematic review, following the distinction between performance analysis or science mapping and content-focused review methodology (Zupic & Čater, 2015; Donthu, Kumar, Mukherjee, Pandey, & Lim, 2021). No PICOS filter or quality appraisal was applied to individual studies, the unit of analysis is the publication as a bibliometric object (authorship, citations, keywords, source), not study findings. The design combines performance analysis (productivity, impact, collaboration indicators) with science mapping (keyword co-occurrence, country co-authorship networks, temporal overlays) to produce both a quantitative baseline and an interpretable structural map of the field.

Data sources and search strategy

Records were retrieved between July and August 2026 from Scopus and Web of Science Core Collection. The primary search string combined controlled vocabulary, exact phrases, and Boolean connectors: TITLE-ABS-KEY ("inclusive physical education" OR "adapted physical education" OR "inclusive PE") AND TITLE-ABS-KEY ("disabilit*" OR "special educational needs" OR "diverse needs") in Scopus, with the equivalent TS= construction in Web of Science. In Scopus this returned 430 records, narrowed to 393 (1994-2025 window), 330 (document type: Article/Review), 304 (English/French language, no Arabic-language records found), and 295 (final publication stage). The Web of Science search returned 449 records, narrowed to 417, 387, 359, and 341 through the same sequential filters.

A post-hoc geographic filter, applied on study context across the 20 MENA nations listed in the UNICEF MENA regional definition (Algeria, Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Sudan, the State of Palestine, Syria, Tunisia, the United Arab Emirates, and Yemen; UNICEF, 2023), isolated the regional corpus. A parallel, geographically unfiltered search using the

identical string returned the worldwide productivity comparator. Full search strings, export files, and the keyword conversion dictionary are available from the corresponding author on reasonable request. Database selection, search-string construction, and indicator choice followed established bibliometric guidelines (Donthu et al., 2021).

Data cleaning, harmonization, and corpus overview

Records were deduplicated automatically using DOI matching followed by a Levenshtein-distance threshold above 0.95. Author names were manually disambiguated using ORCID profiles and institutional affiliations, and keyword variants harmonized through a structured conversion dictionary. After deduplication, disambiguation, and geographic filtering, the final MENA corpus comprised 19 documents (17 articles, 2 reviews) from 13 sources, authored by approximately 49 disambiguated individuals. Co-authorship intensity stood at 4.16 co-authors per document, with 5 single-authored documents and an international co-authorship rate of 31.6%. Average citations per document stood at 7.42 (range 1-25, 141 citations across the corpus, corpus-level h-index = 6) at extraction. The worldwide comparison corpus comprised 431 documents spanning 1994-2025.

A PRISMA-inspired flow summary, within-database screening (year, document type, language, publication stage) reduced the Scopus search from 430 to 295 records and Web of Science from 449 to 341. The combined dual-database search comprised 636 records. DOI-based deduplication and exclusion of book-chapter hybrid records reduced this to the worldwide comparator (N = 431). Geographic filtering then isolated the final MENA analytical corpus (N = 19), illustrated in Figure I.

Software and analytical techniques

Descriptive indicators (annual production; author, affiliation, and country counts; h-index; most-cited documents) were computed in R using the bibliometrix package (Aria & Cuccurullo, 2017) and its biblioshiny interface. Keyword co-occurrence and country co-authorship networks, with temporal overlays, were built in VOSviewer (van Eck & Waltman, 2010) under Association Strength normalization.

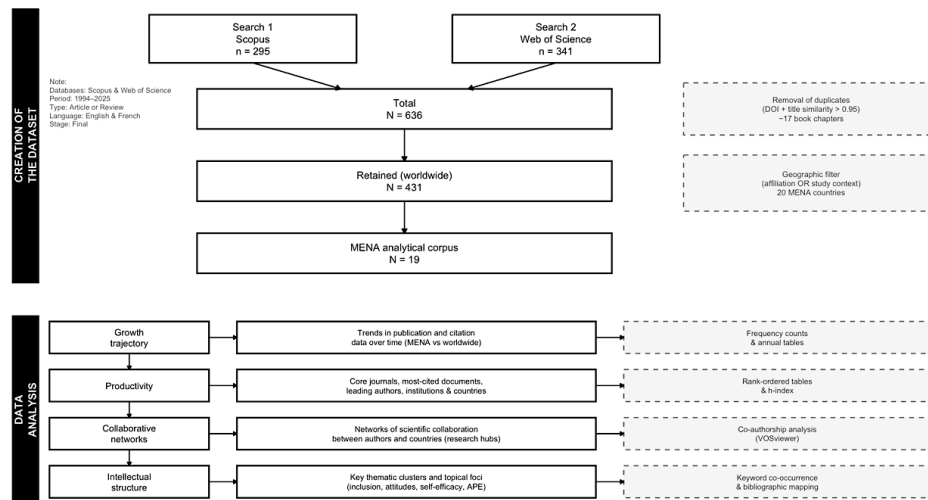


Figure I. Methodological framework of the study.

Results

Temporal productivity

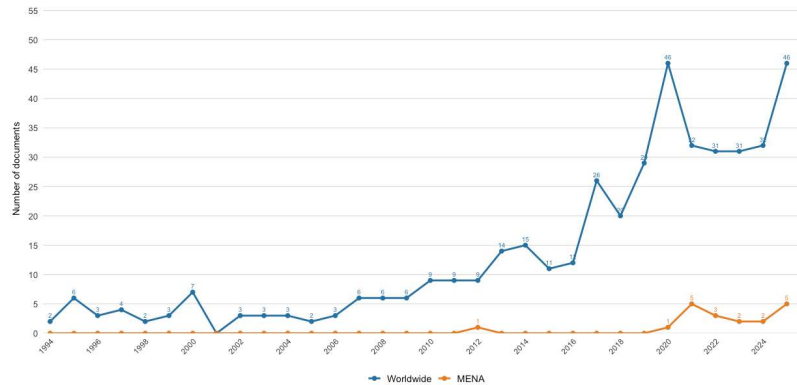
MENA-affiliated document appeared in 2012 (Ali, 2012, King Abdul Aziz University, Saudi Arabia), a conceptual paper with no successor for seven years. No further MENA document appears until 2020, against a worldwide corpus that published in nearly every year across the same period, with a single gap (2001). MENA production resumes in 2020 (n = 1), rises to a first peak of 5 documents in 2021 (15.6% of that year's worldwide output, the series' highest MENA share), eases to 3 (2022), 2 (2023), and 2 (2024), then rises again to 5 in 2025, the corpus's joint-highest annual count. Across 1994-2025, MENA output represents 4.4% of worldwide production (19 of 431 documents), as shown in Table I.

Table I. Annual scientific production, MENA corpus versus worldwide baseline (1994-2025).

Year	MENA (N)	Worldwide (N)	MENA share (%)
1994-2011 (combined)	0	77	0.0
2012	1	9	11.1
2013-2019 (combined)	0	127	0.0
2020	1	46	2.2
2021	5	32	15.6

2022	3	31	9.7
2023	2	31	6.5
2024	2	32	6.2
2025	5	46	10.9
Total	19	431	4.4

Figure II. Annual scientific production, MENA vs. worldwide, 1994-2025.



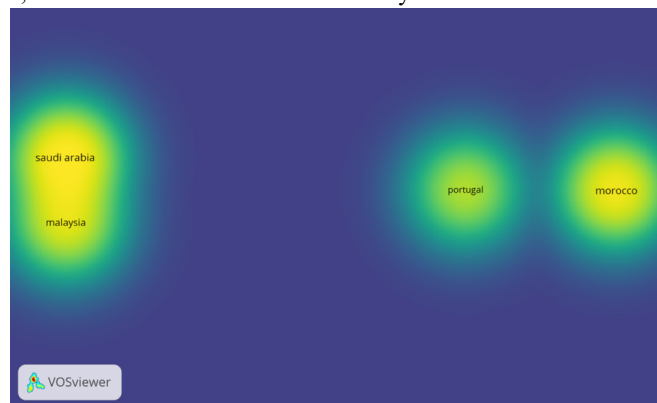
Geographic distribution and Morocco's position

Table II reports the MENA corpus by country of lead affiliation. Saudi Arabia accounts for over half (10 documents, 52.6%), followed by Morocco (6, 31.6%). Two documents (10.5%) are led by Sultan Qaboos University in Oman, and Tunisia contributes one (5.3%). Saudi Arabia and Morocco together account for 84.2% of all MENA output. No MENA country besides these four appears in the corpus.

Table II. Distribution of the MENA corpus by lead country of affiliation.

Country (lead affiliation)	Documents (N)	% of MENA corpus	Citations (sum)	Avg. cit/doc
Saudi Arabia	10	52.6	101	10.10
Morocco	6	31.6	26	4.33
Oman	2	10.5	9	4.50
Tunisia	1	5.3	5	5.00
Total	19	100.0	141	7.42

One Saudi Arabia-attributed record (Alshahrany & Ibrahim, 2021, an exergame for hearing-impaired elementary pupils) enters the corpus through study context alone, its institutional affiliation is the University of Technology Malaysia, with no MENA-based co-author. It is retained under Saudi Arabia in Table II because its title and setting are explicitly Saudi, but it does not contribute to King Faisal University's institutional count and is flagged as the corpus's only context-only inclusion. Viewed through international co-authorship rather than lead-country assignment, the VOSviewer network retains only four countries once a related-items-only filter is



applied. Tunisia and the Oman-led pair show no detectable international tie. Two disconnected bilateral clusters emerge instead: Saudi Arabia-Malaysia, through Alhumaid MM's collaboration with Khoo S, and Morocco-Portugal, through Ben Rakaa O's team collaboration with Lourenço C. The clusters are bridged only loosely, via a shared Portugal-Saudi Arabia tie through Bastos T (University of Porto), who co-publishes with Alhumaid MM. Temporal overlay places the Saudi Arabia-Malaysia tie earlier (around 2021) and the Morocco-Portugal tie later and still forming (2024-2025), as shown in Figure III (a-c).

Figure III a. Country co-authorship density map. Only Saudi Arabia, Malaysia, Portugal, and Morocco reach visible density; all other MENA-tagged countries have no detected international tie.

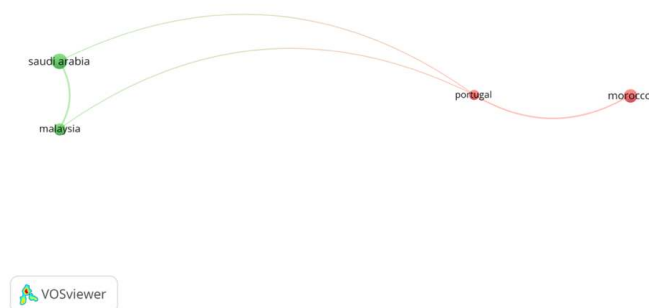
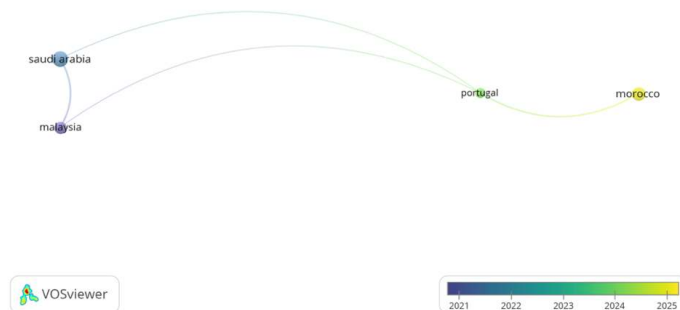


Figure III b. Country co-authorship network, related items only. Green cluster: Saudi Arabia-Malaysia. Red/pink cluster: Portugal-Morocco, bridged to the Saudi Arabia cluster via Portugal.

Figure III c. Same network with temporal overlay. The Saudi Arabia-Malaysia tie is the older collaboration (approximately 2021, blue-green); the Portugal-Morocco tie is markedly more recent (approximately 2024-2025, yellow), indicating a newly forming rather than an established international link for the Moroccan cluster.



Journal distribution and citation profile

The 19-document corpus spans 13 sources. Physical Education Theory and Methodology is the single most frequent outlet (4 documents), followed by Sustainability, the Open Sports Sciences Journal, and the International Journal of Human Movement and Sports Sciences (2 documents each), with the remaining sources contributing one apiece. Given the corpus's small size, Table III reports the complete ranked list of all 19 documents by citation count rather than a top-20 subset. The two most-cited documents, both first-authored by Alhumaid MM in Sustainability, are tied at 25 citations apiece and together account for 35.5% of the corpus's total citation count (141). Source concentration coincides with author concentration, all 4 Physical Education Theory and Methodology documents, and the corpus's sole Retos document, come from the same Hassan II University of Casablanca team, meaning 5 of the 19 documents (26.3%) sit in only two source-author pairings, a structural feature of this small, early-stage corpus.

Table III. All 19 MENA corpus documents ranked by citation count.

Rank	Author(s)	Year	Journal	Cit.
1	Alhumaid MM; Khoo S; Bastos T	2020	Sustainability	25
2	Alhumaid MM; Khoo S; Bastos T	2021	Sustainability	25
3	Alhumaid MM et al. (31 co-authors)	2022	Frontiers in Psychology	18
4	Alhumaid MM	2021	Int. J. Environ. Res. Public Health	11
5	Ben Rakaa O; Bassiri M; Lotfi S	2025	Pedagogy Phys. Culture & Sports	8
6	Ben Rakaa O; Bassiri M; Lotfi S	2024	Phys. Educ. Theory & Methodology	7
7	Al-Hadabi B et al.	2021	Int. J. Human Movement & Sports Sci.	6
8	Alhumaid MM	2023	Int. J. Human Movement & Sports Sci.	6
9	Alhumaid MM	2023	Children (Basel)	6
10	Regaieg G; Sahli S; Kermarrec G	2021	Adapted Physical Activity Quarterly	5

11	Ben Rakaa O; Bassiri M; Lotfi S	2025	Phys. Educ. Theory & Methodology	5
12	Alhumaid MM; Khoo S; Bastos T	2022	Open Sports Sciences Journal	4
13	Lourenco C; Ben Rakaa O et al.	2025	Phys. Educ. Theory & Methodology	4
14	Al-Hadabi BK; Al-Zoubi SM	2024	Int. J. Learning Teaching Educ. Res.	3
15	Alhumaid MM	2022	Open Sports Sciences Journal	3
16	Ali M.	2012	Turkish Online J. Distance Education	2
17	Ben Rakaa O; Bassiri M; Lotfi S	2025	Retos	1
18	Ben Rakaa O; Lourenco C et al.	2025	Phys. Educ. Theory & Methodology	1
19	Alshahrany AN; Ibrahim HB	2021	Estudios de Economia Aplicada	1

Author productivity

A single author dominates the corpus. Alhumaid MM (King Faisal University, Saudi Arabia) contributes 8 of the 19 documents (42.1%), with 98 citations. A second tier is a Moroccan trio, Ben Rakaa O, Bassiri M, and Lotfi S, all at Hassan II University of Casablanca, each credited with 6 documents and 26 citations.

The three co-publish on all six documents, functioning as a single team rather than three independent lines of work. Bastos T (4 documents, 72 citations) and Khoo S (3 documents, 54 citations) are Alhumaid MM's recurring international co-authors rather than MENA-based researchers in their own right, as shown in Table IV.

Table IV. Author profile, top contributors.

Rank	Author	Docs.	Cit.	Affiliation
1	Alhumaid MM	8	98	King Faisal University, Saudi Arabia
2	Bassiri M	6	26	Hassan II University of Casablanca, Morocco
3	Ben Rakaa O	6	26	Hassan II University of Casablanca, Morocco
4	Lotfi S	6	26	Hassan II University of Casablanca, Morocco
5	Bastos T	4	72	University of Porto, Portugal (co-author)
6	Khoo S	3	54	Universiti Malaya, Malaysia (co-author)
7	Lourenco C	2	5	Univ. Beira Interior / ESE Viseu, Portugal

Institutional productivity

Institutional productivity mirrors author-level concentration. King Faisal University (Saudi Arabia) leads with 8 documents (42.1%), followed by Hassan II University of Casablanca (Morocco) with 6 (31.6%) and Sultan Qaboos University (Oman) with 2 (10.5%).

Together, King Faisal University and Hassan II University of Casablanca account for 73.7% of all MENA institutional output.

Table V. Documents by MENA institutional affiliation.

Rank	Institution	Publications (N)	% of total
1	King Faisal University (Saudi Arabia)	8	42.1
2	Hassan II University of Casablanca (Morocco)	6	31.6
3	Sultan Qaboos University (Oman)	2	10.5

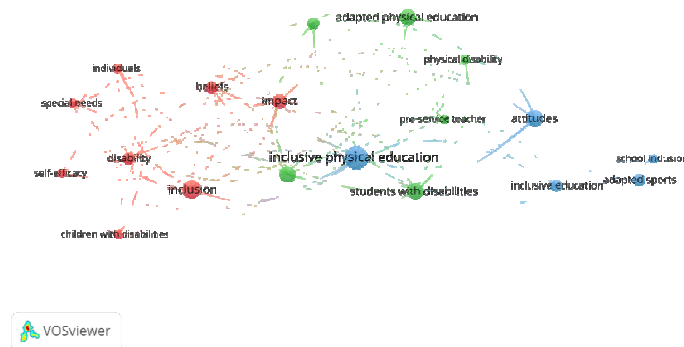
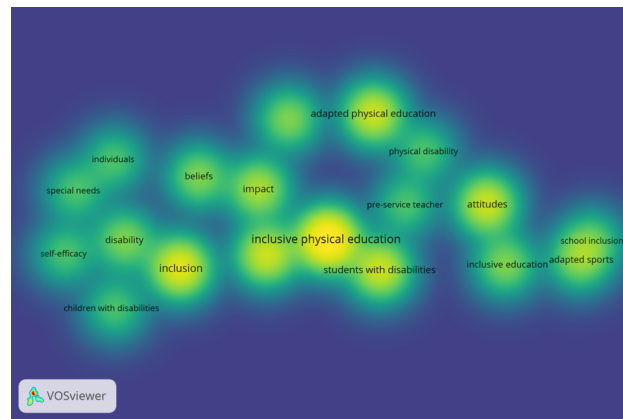
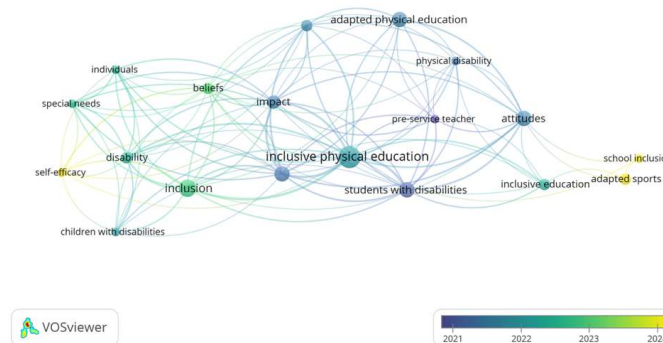
Thematic clusters and keyword structure

The most frequent keyword is inclusive physical education itself (9 occurrences), followed by inclusion (6) and a cluster of near-synonyms, adapted physical education, attitudes, children, and students with disabilities (5 each), listed in Table VI. A second tier, impact (4), adapted sports, beliefs, disability, inclusive education, physical education, Saudi Arabia, and teaching students (3 each), shows the corpus organized around teacher and student attitudes and adapted-delivery mechanisms rather than policy, assessment, or curriculum design. VOSviewer keyword co-occurrence modeling resolves into three structural clusters: a red cluster centered on self-efficacy, beliefs, and individual-level constructs, a green cluster centered on delivery models and a blue cluster encompassing broader environment-level elements.

Temporal tracking shows attitudes, pre-service teacher, and adapted PE forming the field's early vocabulary (around 2021), while self-efficacy, school inclusion, and adapted sports are more recent additions (2023-2025), as shown in Figures IV and V (a-b).

Table VI. Most frequent author keywords (excluding a missing-data artifact).

Keyword	Occurrences
inclusive physical education	9
inclusion	6
adapted physical education	5
students with disabilities	5
disability	4
adapted sports	3
physical education	3
inclusive education	3

Figure IV. Keyword density map. Inclusive physical education, inclusion, and adapted physical education form the three visually dominant density peaks.*Figure V a. Keyword co-occurrence network (3 clusters). Red cluster centers on inclusion, disability, and self-efficacy; green cluster centers on inclusive physical education and adapted physical education; blue cluster centers on attitudes and inclusive education.**Figure V b. Same network with temporal overlay (2021-2024). Self-efficacy and inclusion appear as the earliest-established terms (blue/teal); school inclusion and adapted sports are the most recent additions to the field's vocabulary (yellow).*

Study designs and instrumentation

Table VII presents the full methodological profile of the 19 documents, coded on a six-category taxonomy: conceptual, quantitative cross-sectional survey, quasi-experimental, randomized controlled trial, qualitative, and systematic review.

Two coding decisions are flagged for transparency. Alshahrany and Ibrahim (2021) is coded as qualitative (content analysis plus a systematic-review component), not conceptual, since it analyzes existing exergame literature rather than proposing an untested theory. Regaieg, Sahli, and Kermarrec (2021) is coded as quasi-experimental with random two-group allocation rather than as an “RCT-style” hybrid, since randomization applied to condition assignment but no placebo or waitlist control was used. Sample sizes range from single-digit qualitative interview counts to over 1,300 survey respondents, a span that itself signals the methodological heterogeneity behind the aggregate percentages in Table VIII.

Table VII. Methodological profile of the MENA corpus documents (N = 19).

#	Authors	Year	Design	N	Instrument(s)	Country
1	Ali	2012	Conceptual	n/a	n/a	Saudi Arabia
2	Alhumaid, Khoo & Bastos	2020	Quant. survey	260	SE-PETE-D (Arabic)	Saudi Arabia
3	Al-Hadabi et al.	2021	Quasi-exp. (1-grp)	25	Attitudes toward APA	Oman
4	Regaieg, Sahli & Kermarrec	2021	Quasi-exp. (2-grp)	24	TGMD-2	Tunisia
5	Alhumaid	2021	Quant. survey	214	PESEISD-A (Arabic)	Saudi Arabia
6	Alhumaid, Khoo & Bastos	2021	Quasi-exp. (2-grp)	70	SE-PETE-D (Arabic)	Saudi Arabia
7	Alshahrany & Ibrahim	2021	Qualitative	n/a	n/a	Saudi Arabia (context only)
8	Alhumaid, Khoo & Bastos	2022	Qualitative	6	Semi-structured int.	Saudi Arabia
9	Alhumaid et al. (31)	2022	Quant. survey	1314	SACIE-R (Arabic)	Saudi Arabia
10	Alhumaid	2022	Quant. survey	1303	SACIE-R (Arabic)	Saudi Arabia
11	Alhumaid	2023	Quasi-exp. (2-grp)	40	Arabic scales & SE-PETE-D	Saudi Arabia
12	Alhumaid	2023	Quant. survey	972	SASDPE-PE (Arabic)	Saudi Arabia
13	Al-Hadabi & Al-Zoubi	2024	Quant. survey	87	APE scale (34 items)	Oman
14	Ben Rakaa, Bassiri & Lotfi	2024	Quant. survey	298	Author-devised	Morocco
15	Ben Rakaa, Bassiri & Lotfi	2025	Systematic review	27 stud.	n/a	Morocco
16	Ben Rakaa, Bassiri & Lotfi	2025	Quasi-exp. (3-grp)	96	OMSAT-4 & Inclusion	Morocco
17	Ben Rakaa, Bassiri & Lotfi	2025	Quasi-exp. (3-grp)	96	Self-esteem etc.	Morocco
18	Ben Rakaa, Lourenço et al.	2025	RCT	96	SMS-28 & Ryff	Morocco
19	Lourenço, Ben Rakaa et al.	2025	Systematic review	13 stud.	n/a	Morocco/Portugal

Table VIII aggregates these profiles by design category and country of lead affiliation. Quantitative designs anchor the field (14 of 19 documents, 73.7%). Cross-sectional surveys constitute 36.8% (7 documents), quasi-experimental designs 31.6% (6 documents), and the sole randomized controlled trial 5.3%. Qualitative research and systematic reviews each account for 10.5% (2 documents), and the single 2012 conceptual paper accounts for 5.3%. No document reports a formally integrated mixed-methods design.

Table VIII. Distribution of research designs across the MENA corpus, by country.

Design	Saudi Arabia	Morocco	Oman	Tunisia	Total (N)	% of corpus
Conceptual	1	0	0	0	1	5.3
Quant. (cross-sect. survey)	5	1	1	0	7	36.8
Quasi-experimental	2	2	1	1	6	31.6
Randomized controlled trial	0	1	0	0	1	5.3
Qualitative	2	0	0	0	2	10.5
Systematic review	0	2	0	0	2	10.5
Quantitative subtotal	7	4	2	1	14	73.7
Total	10	6	2	1	19	100.0

Saudi Arabian output is almost exclusively quantitative and instrument-based, structured around repeated administrations of scales originally developed outside the region (SE-PETE-D, SACIE-R, PESEISD-A, SASDPE-PE). Their Arabic versions are treated as validated instruments, yet none of the corresponding studies reports confirmatory factor analysis needed to establish measurement invariance (Vandenberg & Lance, 2000). Cross-cultural applications elsewhere have not always replicated original factor structures without modification (Murdaca, Oliva, & Costa, 2016; Reina, Ferriz, & Roldan, 2019).

Morocco's six documents span a narrower volume but a wider range of designs: one cross-sectional survey, two quasi-experimental studies, the corpus's only randomized controlled trial, and one of the two systematic reviews, all from the same three-author team. No document in the corpus reports confirmatory factor analysis or structural equation modeling, psychometric validation relies exclusively on exploratory factor analysis or principal component analysis.

Discussion

A delayed and fragile emergence

Aside from a single 2012 Saudi-affiliated conceptual paper, continuous MENA-region IPE publication begins only in 2020, more than a quarter-century after Salamanca. The temporal profile indicates that MENA-region IPE research is not a maturing field but a genuinely nascent one. The 2021 peak (15.6% of worldwide share) and the renewed rise in 2025 indicate growing regional interest whose sustainability cannot yet be judged. This temporal lag constitutes a clear instance of policy-research asymmetry, advanced legislative frameworks have not been matched by a corresponding, sustained scientific knowledge base until very recently.

Morocco's position: real but concentrated in a single team

Morocco is the second-largest MENA contributor (31.6%), yet that contribution is structurally narrow. All six Moroccan documents involve the same three-author Hassan II University of Casablanca team, with a Portuguese collaborator joining only in the two most recent (2025) papers, and all six were produced within a two-year period (2024-2025). Saudi Arabia and Morocco jointly account for 84.2% of output, yet each through essentially one research team. This "one-team effect" means the field's continuity currently depends on individual career trajectories rather than institutionalized capacity.

Thematic focus and emerging paradigms

The keyword structure, dominated by inclusion, attitudes, self-efficacy, and adapted-delivery mechanisms, shows the MENA literature concentrating on teacher- and student-level psychological and pedagogical variables rather than system-level themes. Three paradigms emerge: a psychometric-attitude paradigm dominant in Saudi work, a performance-motor paradigm exemplified by the Tunisian TGMD-2 study, and a theoretical-synthesis paradigm represented by the two review papers. The Moroccan sub-corpus straddles the first and third but has not yet adopted the systematic instrument-validation infrastructure developed in Saudi work.

Methodological divergence: instrument validation as a regional fault line

Within the psychometric-attitude paradigm, the Saudi sub-corpus has moved toward a standardized two-stage validation infrastructure that the Moroccan sub-corpus has not adopted. Exploratory factor analysis and principal component analysis remain a first-generation step common to both: neither has progressed to confirmatory factor analysis or structural equation modeling. Recent validation studies outside MENA routinely report full confirmatory-fit indices and measurement-invariance tests (Reina et al., 2019; Rupperecht, Steindorf, & Scheuer, 2022).

International collaboration: two isolated bilateral ties

Rather than a connected regional network, the MENA corpus's international collaboration structure consists of two separate bilateral relationships, bridged only loosely via Portuguese co-authors. No direct Morocco-Saudi Arabia collaboration, nor any collaboration between two MENA countries, was detected.

A methodological ceiling: design binarity and first-generation psychometrics

The absence of mixed-methods studies reveals a binary divide between quantitative survey research and qualitative or review-based work. Within the quantitative majority, every psychometric validation relies exclusively on exploratory factor analysis or principal component analysis. No instrument used in this literature has been formally tested for measurement invariance against its source version (Vandenberg & Lance, 2000), leaving the corpus's own most-cited findings without a demonstrated basis for cross-cultural comparability.

Comparison with the international literature

Supriyatni et al. (2025) found that teacher attitudes, self-efficacy, and instructional adaptation dominate the global IPE literature. The present corpus reproduces this thematic architecture almost exactly, but in the MENA context this architecture arrived largely as an import of Western-validated constructs rather than as an outcome of locally grounded theorizing. No document examines how religious framing of disability, gender-segregated schooling, or family expectations condition inclusive practice. Yılmaz and Han (2026) identified underrepresentation of the Global South; the present findings situate MENA within that periphery while showing it has begun to enter the field's productive core since 2020.

The apparent scarcity may partly reflect an indexing artifact, Francophone and Arabic output circulating in national journals, theses, or conference proceedings may be systematically undercounted. The one-team effect may also reflect an ordinary early-stage pattern in which any nascent field is carried by a small number of pioneering groups before capacity broadens. Neither alternative negates the substantive conclusions, but both temper claims that the observed pattern is uniquely dysfunctional.

Beyond its descriptive value, this analysis demonstrates that thematic universality in IPE research is not evidence of theoretical universality. The field's core constructs travel readily across borders as survey instruments, but the socio-cultural conditions that might require their adaptation have not yet been investigated in this setting.

Limitations

Restriction to Scopus and Web of Science, with no Arabic-language records returned, means Francophone and Arabic-language Moroccan output not indexed in either database is not captured, so Morocco's true output may exceed the six documents identified here. The small absolute corpus size ($N = 19$) limits the statistical stability of citation averages, h-index values, and country-level percentages. Finally, citation counts are additionally skewed toward the earliest-published documents by longer exposure windows, and network analyses on a corpus this small should be interpreted as descriptive rather than inferential. The post-hoc geographic filter involves judgment on borderline cases.

Conclusions***Synthesis of findings***

This is, to the authors' knowledge, the first bibliometric map of inclusive physical education research specific to Morocco and the MENA region. The temporal profile indicates that MENA-region IPE research is a genuinely nascent field whose entire continuous history spans barely six years. Geographic concentration compounds this fragility: Saudi Arabia and Morocco together account for 84.2% of all output, yet in each country this output is the work of essentially a single team. The methodological ceiling—a complete absence of mixed-methods integration and exclusive reliance on first-generation exploratory factor analysis—carries direct practical and theoretical consequences. Survey-only designs can document the prevalence of an attitude but cannot explain why it exists or how it is shaped by locally specific cultural, religious, or institutional factors. The absence of confirmatory factor analysis means that no instrument used in this corpus has been formally tested for measurement invariance across the MENA context (Vandenberg & Lance, 2000).

Theoretical contribution

The consistent absence of studies examining how religious framing of disability, family and community expectations, gender-segregated schooling practices, or the specific institutional structure of MENA teacher-education systems shape inclusive practice suggests that the field's presumed universality has not, in fact, been empirically tested in this socio-cultural context; it has simply not yet been studied at all. These cumulative gaps point implicitly toward a necessary theoretical direction: given that Morocco and comparable MENA countries are at an initial stage of IPE development, what is urgently needed is a foundational framework that uses advanced international systems solely as broad reference points, while deliberately prioritizing foundational enablers, namely locally adapted assessment tools, culturally grounded teacher training, and community and family sensitization, rather than importing the "top-end" problems characteristic of fully matured systems. Such a model would necessarily anchor its architecture in the very socio-cultural dimensions that current research has entirely overlooked, ensuring that IPE expansion proceeds from the ground up rather than from a borrowed template.

Recommendations for future research

The descriptive baseline established here points directly to several research priorities. Chief among these is the imperative to construct and validate a foundational, context-sensitive theoretical framework for Morocco and comparable MENA contexts, one that uses advanced international systems solely as broad reference points while prioritizing foundational enablers, namely locally adapted assessment tools, culturally

grounded teacher training, and community and family sensitization, rather than importing the "top-end" problems characteristic of fully matured systems. Such a framework would necessarily anchor its architecture in the very socio-cultural dimensions that current research has entirely overlooked, including religious framings of disability, family and community expectations, gender-segregated schooling practices, and the institutional structure of teacher-education systems, thereby ensuring that IPE expansion proceeds from the ground up.

A parallel priority involves a multi-country collaborative study using confirmatory factor analysis and structural equation modeling to test whether existing instruments hold the same factor structure in MENA populations; where invariance fails, a culturally adapted MENA Inclusive Physical Education Attitudes Scale should be developed through joint item development and bilingual cognitive pretesting (Beaton et al., 2000).

Design diversification toward mixed-methods research is equally pressing, as is the establishment of a virtual MENA Inclusive Physical Education Research Network, convened initially between the Saudi and Moroccan teams identified here. Finally, thematic expansion into disability-specific curricular adaptation, evaluation of pre-service and in-service teacher-training programs, and systematic policy-document analysis is warranted. A subsequent bibliometric follow-up incorporating Arabic- and French-language sources would help test whether the scarcity identified here reflects genuine research absence or an indexing artifact. Together, these interconnected steps would convert the descriptive baseline established here into an actionable, locally grounded research agenda for the region.

Ethics statement

This study analyzed publicly available bibliometric metadata only and did not involve human participants, animal subjects, or the collection of primary data; formal ethical approval was therefore not required.

Conflicts of interest

The authors declare no conflict of interest.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used Claude AI in order to support minor linguistic editing and refinement of the English language. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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