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Research Article

DEVELOPING ENGLISH FOR SPECIFIC PURPOSES MATERIALS: A NARRATIVE REVIEW OF RECENT RESEARCH

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Abstract

English for Specific Purposes (ESP) is often described as materials-driven, yet many ESP teachers, especially in English as a foreign language (EFL) settings, must select, adapt or write materials with limited training, time and disciplinary knowledge. This narrative review examined how recent research conceptualises and practises ESP materials development and what challenges it reports. Twenty-one studies published between 2017 and 2026 were reviewed, drawn from peer-reviewed journals and selected through keyword searches of academic search engines, the Directory of Open Access Journals and the archives of ESP-focused journals, and were read against foundational and state-of-the-art ESP literature. The studies came from 12 countries and territories, with Indonesia the most represented (10 studies), and comprised research and development studies, qualitative studies of teachers, surveys, evaluations, conceptual papers and one systematic review. Thematic synthesis produced five themes: needs analysis as the starting point of materials design; authenticity and its adaptation for learners' proficiency; development models and pedagogical approaches, particularly genre-based, task-based and research and development models such as ADDIE and 4D; technology, including corpora and generative artificial intelligence; and the teacher as materials developer. Across contexts, materials were consistently grounded in needs analysis and authentic texts, but teachers reported limited training in materials development, scarce published materials in less common fields and little collaboration with subject specialists. Evidence of learning outcomes was thin: most development studies reported validity, practicality or learner perceptions rather than controlled measures of performance in target tasks. The review argues that ESP materials development is best understood as a cyclical, collaborative and evidence-informed process, and it calls for teacher education in materials development and for outcome-focused evaluations of locally developed and AI-assisted materials.

Keywords: *Authenticity; English for Specific Purposes; Materials Development; Needs Analysis; Teacher Education*

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INTRODUCTION

The spread of English as the main language of international scholarship, trade and technology has made English for Specific Purposes (ESP) a central part of language provision in universities and workplaces. ESP courses aim to equip learners with the language, genres and communicative practices required in particular academic or professional communities, rather than with general proficiency alone (Hyland, 2022). A bibliometric analysis of about 3,500 ESP papers indexed in the Social Science Citation Index since 1990 shows that the field has grown from a marginal branch of applied linguistics into an international discipline in which classroom practice remains a central concern (Hyland & Jiang, 2021).

Materials sit at the heart of this classroom practice. From its beginnings, ESP has been described as a materials-driven enterprise in which teaching and materials are founded on the results of needs analysis (Dudley-Evans & St John, 1998; Hutchinson & Waters, 1987). Unlike general English, where commercial coursebooks are widely available, many ESP fields have few suitable published materials. Teachers are therefore expected to analyse needs, find and adapt authentic texts, write tasks and evaluate the results, often in disciplines they did not study themselves (Basturkmen, 2019; Bocanegra-Valle & Basturkmen, 2019).

These demands are particularly visible in EFL contexts such as Indonesia, where ESP is a compulsory course in many study programmes and where lecturers frequently develop their own materials for nursing, engineering, management, tourism or Islamic studies students (Fauziah, 2025; Pongsapan, 2018; Syarifah, 2017). Recent technological change has added further options and pressures. Corpora, online platforms and, since 2022, generative artificial intelligence (AI) tools such as ChatGPT promise to make specialised materials easier to produce, but they also raise questions about accuracy, pedagogy and teachers' digital competence (Chirobocea-Tudor, 2024; Kohnke et al., 2023).

Research on ESP materials development has grown accordingly, but much of it consists of local development projects, small qualitative studies and practice-oriented papers that are rarely read together. Reviews in the area have tended to focus on one component, such as needs analysis for engineering students (Musrina et al., 2024), rather than on materials development as a whole. As a result, it is difficult for teachers and researchers to see which principles recent studies share, which approaches they use, and where the evidence remains weak.

This article addresses that gap through a narrative review of recent research on ESP materials development. It aims to synthesise how recent studies design and evaluate ESP materials, to identify the challenges they report, and to set out directions for practice and research. The review is guided by three questions:

RQ1. How does recent research approach the development of ESP materials?

RQ2. What challenges in ESP materials development does recent research report?

RQ3. What gaps remain for future research and practice?

LITERATURE REVIEW

English for Specific Purposes and the Primacy of Needs

ESP is generally defined by its responsiveness to learners' specific needs rather than by a particular method. Dudley-Evans and St John (1998) describe its absolute characteristics as meeting the specific needs of learners, making use of the methodology and activities of the discipline it serves, and centring on the language, skills, discourse and genres appropriate to those activities. Hutchinson and Waters (1987) similarly present ESP as an approach in which all decisions about content and method are based on the learner's reason for learning. Hyland (2022) adds that learners' needs vary widely across disciplines and professions, so that the English taught at school rarely prepares students for the genres and communicative norms they later meet.

Needs analysis is therefore treated as the starting point of ESP course and materials design. Hutchinson and Waters (1987) distinguish target needs, which comprise necessities, lacks and wants, from learning needs, meaning what learners must do in order to learn. Later work broadened the concept to include present situation analysis, the analysis of the learning environment and the views of multiple stakeholders (Dudley-Evans & St John, 1998). Anthony (2018) presents needs analysis, learning objectives, methods and materials, and evaluation as four interrelated pillars of ESP.

Materials and Materials Development

In the broader field of language teaching, Tomlinson (2011) defines materials as anything used by teachers or learners to facilitate language learning, including coursebooks, videos, authentic documents, tasks and even talk in the classroom. Materials development is both a field of study, concerned with the principles of designing, implementing and evaluating materials, and a practical undertaking carried out by writers, teachers and learners.

Tomlinson (2011) proposes principles derived from second language acquisition research, among them that materials should achieve impact, be perceived as relevant and useful, expose learners to language in authentic use, draw attention to linguistic features, and provide opportunities to use the language for communicative purposes.

Within ESP, these principles meet the demand for specificity. Authentic materials have long been preferred because they reflect the texts and tasks of the target community. Gilmore (2007) shows, however, that authenticity is a contested notion that can refer to texts, tasks, learners' engagement or the social situation of the classroom, and that authentic input must be balanced against learners' proficiency. Developing ESP materials thus involves a series of decisions: whether to select, adapt or write materials; which texts and genres to use; how to sequence tasks; and how to evaluate whether the materials work (Anthony, 2018; Tomlinson, 2011).

Teachers as Materials Developers

Because ESP teachers carry out these decisions, recent literature has turned to their knowledge and professional needs. Basturkmen (2019) observes that teaching ESP involves analysing learner needs and specialist discourse and developing courses and materials, tasks for which many teachers have not been prepared, and that the field has paid far less attention to teachers' learning needs than to learners' needs. Studies of experienced ESP teachers confirm that materials development is a core but under-supported part of their work (Bocanegra-Valle & Basturkmen, 2019). This body of work provides the framework for the present review: materials development is examined as a process that begins with needs, draws on authentic discourse, takes shape through particular pedagogical and technological choices, and depends on the expertise of teachers.

METHOD

Design. This study is a narrative literature review. A narrative design was chosen because the research on ESP materials development is methodologically diverse, combining research and development (R&D) studies, qualitative case studies, surveys, evaluations and conceptual papers. Such diversity suits interpretive synthesis better than statistical aggregation. The review does not claim the exhaustive coverage of a systematic review, and its selection procedure is described below so that readers can judge its scope.

Identification of sources. Sources were identified in October 2026 through keyword searches of academic web search engines, the Directory of Open Access Journals (DOAJ),

and the online archives of ESP-focused journals, including the *Journal of Teaching English for Specific and Academic Purposes*, *ESP Today* and *Ibérica*. The search terms combined "English for specific purposes" or "ESP" with "materials development", "material design", "textbook", "authentic materials", "needs analysis", "corpus", "ChatGPT" and "artificial intelligence". The reference lists of retrieved articles were also checked.

Selection criteria. Studies were included if they (a) were published in peer-reviewed journals between 2017 and 2026; (b) focused on the design, development, adaptation, evaluation or use of ESP materials, or on teachers' practices and needs in developing them; (c) reported empirical data or a documented design process, or reviewed research on these topics; and (d) were written in English. Studies of general English materials and conference abstracts were excluded. Each study's bibliographic details and abstract were checked on the journal's website or an institutional repository. Twenty-one studies met the criteria (Table 1). Foundational works and state-of-the-art reviews were used to frame the analysis but are not counted among the reviewed studies.

Analysis. For each study, the author recorded the context, field, design and main findings concerning materials. The data were then analysed thematically. Initial codes such as "needs analysis", "authentic texts", "R&D model", "AI" and "teacher training" were grouped into five themes, which structure the findings. Because the review drew on published articles, no ethical approval was required.

Table 1. Overview of the reviewed studies (n = 21)

Study	Context	Field and design	Focus relevant to materials
Alhamami (2022)	Saudi Arabia	Engineering; corpus-based design	Grammar materials from Google Books Corpus
Barseghyan & Hovakimyan (2026)	Armenia	Financial literacy; course design study	AI-assisted multimodal ESP module
Bocanegra-Valle & Basturkmen (2019)	Spain	Various fields; interviews (19 teachers)	Teacher education needs, including materials development
Chan (2019)	Hong Kong	Business; career narratives	Long-term workplace communication needs
Chirobocea-Tudor (2024)	Romania	Horticulture; case study	ChatGPT-generated ESP materials
Deng (2021)	China	University ESP; observation, interviews	Teachers' adaptation of a new textbook
Doğan & Yaylı (2025)	Türkiye	Various fields; interviews (9 teachers)	Challenges and strategies in ESP teaching
Fauziah (2025)	Indonesia	Management; R&D (4D model)	Developing ESP materials
Haryani & Emha (2025)	Indonesia	Health science; R&D	AI-based interactive e-book

Study	Context	Field and design	Focus relevant to materials
Kakoulli Constantinou & Papadima-Sophocleous (2020)	Greece, Cyprus	Various fields; survey (67 teachers)	Digital technology in ESP preparation and delivery
Kočović Pajević (2025)	Serbia	Psychology; questionnaire	Textbook evaluation by students
Munir (2019)	Indonesia	Teacher education; classroom project	Student teachers designing ESP textbooks
Musrina et al. (2024)	Indonesia	Engineering; systematic review (26 studies)	Trends in ESP needs analysis
Nugraha et al. (2023)	Indonesia	Aviation; conceptual design	Corpus-informed lesson design
Nurmetov et al. (2025)	Not specified	Information technology; conceptual	Adapting authentic materials
Pongsapan (2018)	Indonesia	Nursing; R&D (ADDIE)	Needs-based speaking materials
Ratnawati (2018)	Indonesia	Tourism; materials development	Online task-based materials
Sari et al. (2024)	Indonesia	Mechanical engineering; mixed methods	Needs for authentic materials
Sukmawati & Nasution (2020)	Indonesia	Informatics engineering; classroom action research	Genre-based writing instruction
Syarifah (2017)	Indonesia	Various fields; questionnaires, interviews (3 lecturers)	Lecturers' understanding of materials development
Tiongson (2019)	Philippines	Professional writing; interviews (2 teachers)	Collaboration with content specialists

Note. Studies are listed alphabetically by first author. R&D = research and development; AI = artificial intelligence.

FINDINGS AND DISCUSSION

The 21 reviewed studies came from 12 countries and territories. Indonesia was the most represented context, with 10 studies, followed by single studies from other parts of Asia and from Europe. Six studies developed or designed materials, six examined teachers' practices, needs or challenges, three examined learners' needs or evaluations of materials, two applied a particular pedagogy, and four were conceptual, exploratory or review papers. The findings are organised under five themes, and Table 2 summarises them with the gaps they reveal.

Needs Analysis as the Starting Point of Materials Design

All the development studies began with some form of needs analysis, confirming the long-standing view that ESP materials are founded on needs (Dudley-Evans & St John, 1998). In Indonesia, Pongsapan (2018) surveyed 60 nursing students, five lecturers and 14 nurses

before designing speaking materials around hospital situations such as giving advice, explaining laboratory tests and administering medication. Fauziah (2025) involved 78 students, teachers and experts in developing management materials with the 4D model. Ratnawati (2018) designed online tour-guide materials for Indonesian migrant workers by moving from environment and needs analysis through goals, content and sequencing, format, assessment and evaluation. Barseghyan and Hovakimyan (2026) likewise began their AI-assisted financial literacy module with a survey of students' knowledge, skills and language needs.

The scope of needs analysis is, however, often narrow. In their review of 26 needs analysis studies on ESP for engineering students published between 2018 and 2023, Musrina et al. (2024) found that most studies came from EFL contexts, especially Indonesia, and mostly involved university participants. They recommended more attention to workplace needs and to authentic content in materials. Chan's (2019) study of senior business executives in Hong Kong shows why this matters. Over careers of more than 20 years, the executives' roles in relation to technical financial genres changed. They struggled most with non-technical genres that required tact and diplomacy as well as advanced proficiency. Materials based only on students' immediate academic needs may therefore miss the communicative demands learners will face later in their careers.

These findings extend Hutchinson and Waters' (1987) distinction between target and learning needs. Recent studies are good at documenting learners' wants and the immediate target situation, but fewer consult employers or follow needs over time. For materials developers, the implication is that needs analysis should include workplace informants and be repeated as courses are taught, rather than treated as a one-off survey at the start of a project.

Authenticity and Adaptation

Authentic materials remain the preferred basis for ESP content. Sari et al. (2024) found that mechanical engineering students wanted authentic materials, and that stakeholders and experts supported them as a way to strengthen students' communicative skills. Nurmetov et al. (2025) proposed using technical manuals, software documentation, industry reports and case studies with information technology students. Bocanegra-Valle and Basturkmen (2019) report that the teachers they interviewed felt they needed to develop, select or adapt materials that show how language is used in the discipline or profession.

The reviewed studies also show that authenticity must be adapted to learners. Nurmetov et al. (2025) proposed a framework for adjusting authentic materials to different

proficiency levels, echoing Gilmore's (2007) argument that authentic input must be balanced against accessibility. Doğan and Yaylı (2025) found that learners' limited or uneven proficiency was the main challenge for ESP instructors in Türkiye: it complicated the selection and adaptation of materials and increased teachers' workload. Instructors responded with translanguaging, images, videos, general English materials and AI tools.

Adaptation is not always pedagogically productive, however. In a Chinese university, Deng (2021) found that teachers using a new ESP textbook mostly skipped its research tasks, skimmed its reading strategies and simplified its discipline-related content. More advanced adaptations, such as adding subject knowledge, reordering lessons or creating new content, were rare. Deng concluded that teachers tended to simplify instruction rather than make it more meaningful. Evaluations of published textbooks point to a related problem of balance: psychology students in Serbia rated their ESP textbook's topics and vocabulary favourably but reported too few listening, writing and grammar tasks (Kočović Pajević, 2025). Taken together, these studies suggest that authenticity is necessary but not sufficient. Materials must also provide a balanced range of tasks and enough support for learners to engage with demanding texts.

Development Models and Pedagogical Approaches

The development studies relied on explicit instructional design models. Pongsapan (2018) used ADDIE (analysis, design, development, implementation and evaluation), including expert review and a small-group trial at another nursing college. Fauziah (2025) used the 4D model (define, design, develop, disseminate) and judged the product valid, practical and effective, although usable only after revision. Ratnawati (2018) combined a curriculum design sequence with stages for online materials. Haryani and Emha (2025) followed an R&D design from needs analysis to an AI-based prototype tested with 30 medical students. These models give ESP materials projects a transparent structure, which is an advance on the largely intuitive writing processes that Tomlinson (2011) reports among materials writers.

Within these models, two pedagogical approaches were prominent. A genre-based approach was used by Sukmawati and Nasution (2020), whose classroom action research with informatics engineering students in Indonesia reported mean writing scores rising from 54 to 70.5 over two cycles. A task-based approach underpinned Ratnawati's (2018) tour-guide materials, which combined tutorials, lessons and real-time online classes. Munir (2019) shows a further pedagogical possibility: student teachers in an ESP course designed their own

ESP textbooks in a four-stage project of preparation, drafting, finalising and peer teaching, which the author reports improved cooperation, knowledge and creativity. Such projects can prepare future teachers for the materials development role that ESP will require of them.

The outcome evidence in this theme is, however, limited. Most development studies reported expert validation, practicality or learner perceptions, and the studies that measured performance used small groups without comparison classes. This pattern echoes Tomlinson's (2011) call for systematic, longitudinal evaluations of what materials actually do for learners, rather than judgements of their apparent appeal.

Technology: Corpora, Digital Tools and Generative AI

Corpora offer ESP materials developers an empirical basis for selecting language. In a meta-analysis of 64 studies, Boulton and Cobb (2017) found large overall effects of data-driven learning, with d = 0.95 for comparisons between control and experimental groups and d = 1.50 for pre- and post-test comparisons. Within ESP, Nugraha et al. (2023) proposed aviation English lessons that combine a direct approach, in which students explore corpus data, with an indirect approach, in which teachers use corpora to select authentic texts and vocabulary. Alhamami (2022) used word frequencies in the Google Books Corpus to build grammar materials for engineering students around the nouns, verbs, adjectives, adverbs and prepositions most common in engineering texts.

Digital tools are already part of ESP teachers' routines. In a survey of 67 ESP practitioners in Greece and Cyprus, Kakoulli Constantinou and Papadima-Sophocleous (2020) found that 44.78% always and 35.82% very frequently used technology in their courses. Technology was used more for preparing courses than for delivering them, and almost 90% of the respondents agreed that ESP teacher education should include teaching with technology.

Generative AI is the most recent development. Kohnke et al. (2023) describe ChatGPT's potential for language teaching while stressing its limitations and the digital competencies teachers and learners need. Chirobocea-Tudor (2024) tested ChatGPT as a generator of ESP materials for horticulture, a niche field with few ready-made resources. She found that carefully constructed prompts could yield useful materials but that the reliability of the generated information required caution. Haryani and Emha (2025) developed an e-book with adaptive modules, a clinical dialogue chatbot and speech recognition, and reported gains in medical students' speaking across fluency, pronunciation, vocabulary, grammar and cohesion. Barseghyan and Hovakimyan (2026) combined authentic, teacher-written and AI-

generated resources in a five-week module. These studies suggest that AI can reduce the burden of producing materials in under-resourced fields. Their designs, however, are exploratory, and the accuracy of AI-generated specialist content still depends on teachers' and experts' checking.

The Teacher as Materials Developer

The most consistent challenge across the reviewed studies concerns teachers' preparation for materials development. Bocanegra-Valle and Basturkmen (2019) found that experienced ESP teachers in Spain identified needs in course development, knowledge of the target discipline and its language use, peer collaboration and professional development. Almost all of them regarded the ability to develop materials that meet target needs as essential. They also saw the lack of training in materials development as a key difference between ESP and general English teaching. Teachers in fields with few textbooks, such as naval engineering, felt a stronger need to design their own materials than those in well-served fields such as business.

Similar patterns appear elsewhere. Syarifah (2017) found that three Indonesian lecturers varied widely in their understanding of the curriculum and in their practice: one followed guidelines without adding materials, one developed discipline-specific materials, and one presented general content. Deng (2021) attributed Chinese teachers' superficial adaptations partly to limited ability, low awareness and fear of error, and recommended specialised training in materials development. Doğan and Yaylı (2025) reported a lack of pre-service and in-service ESP training and little collaboration with subject instructors in Türkiye. In Greece and Cyprus, 58.21% of practitioners named collaboration with subject specialists and colleagues as an area needing improvement (Kakoulli Constantinou & Papadima-Sophocleous, 2020). Tiongson (2019) found that Philippine ESP teachers teaching professional writing struggled with technical content and saw interdisciplinary collaboration as a possible response.

These findings support Basturkmen's (2019) argument that ESP teacher education has lagged behind the attention given to learners' needs. They also indicate that collaboration, which the foundational literature has long recommended (Dudley-Evans & St John, 1998), is still more an aspiration than a routine practice.

Table 2. Summary of themes, main findings and gaps

Theme	Main findings	Gaps and implications

Theme	Main findings	Gaps and implications
Needs analysis	Every development study began with needs analysis, often with students, lecturers and practitioners.	Few studies consulted employers or followed needs over time; workplace and long-term needs deserve more attention.
Authenticity and adaptation	Learners, experts and teachers favour authentic materials; proficiency gaps make adaptation necessary.	Adaptation often simplifies rather than enriches; teachers need adaptation strategies that keep tasks meaningful.
Development models and approaches	ADDIE, 4D and curriculum design sequences structure projects; genre- and task-based approaches dominate.	Most studies report validity, practicality or perceptions; controlled evidence of learning outcomes is scarce.
Technology	Corpora support language selection; digital tools are widely used; generative AI can produce materials for niche fields.	AI-generated content needs expert checking; evaluations of AI-assisted materials are exploratory.
Teacher as developer	Teachers lack training in materials development, disciplinary knowledge and collaboration with subject specialists.	Teacher education in materials development and institutional support for collaboration are needed.

Discussion

In answer to RQ1, the reviewed studies approach ESP materials development as a needs-based, authenticity-oriented process structured by explicit design models and increasingly supported by technology. This confirms the principles set out in foundational work (Dudley-Evans & St John, 1998; Hutchinson & Waters, 1987) and in Tomlinson's (2011) account of materials development, while adding recent tools such as corpora and generative AI. The process is best seen as cyclical: needs analysis informs the selection and adaptation of authentic texts, design models guide the writing of tasks, and evaluation feeds back into needs and revision, as Anthony's (2018) four-pillar model suggests.

In answer to RQ2, the challenges cluster around three tensions. The first is between authenticity and accessibility: learners and experts value authentic materials, but uneven proficiency forces adaptation, and adaptation can strip away the very features that make materials specific (Deng, 2021; Doğan & Yaylı, 2025). The second is between the expectations placed on ESP teachers and their preparation. Teachers are expected to act as needs analysts, materials writers and evaluators, but often lack training and disciplinary support (Basturkmen, 2019; Bocanegra-Valle & Basturkmen, 2019). The third is between the promise of technology and the evidence for it. Corpora are well supported by meta-analytic evidence (Boulton & Cobb, 2017), whereas research on AI-assisted ESP materials is still at an exploratory stage (Chirobocea-Tudor, 2024; Haryani & Emha, 2025).

In answer to RQ3, the review identifies four gaps. First, development studies rarely measure learning outcomes with comparison groups or delayed tests. Second, needs analyses seldom include employers or long-term career needs. Third, research on how teachers learn to develop ESP materials, and on collaboration with subject specialists, remains small and mostly qualitative. Fourth, the reviewed corpus is concentrated in Indonesia and other EFL settings, which strengthens its relevance to these contexts but limits generalisation. Because this is a narrative review based on 21 studies located through non-exhaustive searches, these conclusions should be read as indicative rather than definitive.

CONCLUSION

This review of 21 recent studies shows that ESP materials development is grounded in needs analysis and authentic discourse, structured by explicit design models such as ADDIE and 4D, and increasingly supported by corpora and generative AI. Its main challenges lie in adapting authentic materials to learners' proficiency without losing their specificity, in teachers' limited preparation and disciplinary support, and in the thin evidence of learning outcomes. The review contributes an integrated picture of these strands, showing that the quality of ESP materials depends as much on teachers' expertise and institutional support as on design principles.

Three practical implications follow. ESP programmes should base materials on needs analyses that include practitioners and employers and that are revisited as courses run. Teacher education, both pre-service and in-service, should include training in genre analysis, corpus tools, AI-assisted design and materials evaluation, and institutions should create time and structures for collaboration with subject specialists. AI-generated materials should be checked for accuracy by teachers and, where needed, by subject experts before classroom use.

The review is limited by its narrative design and non-exhaustive search, by its reliance on English-language journal articles, and by the concentration of studies in Indonesia. Future research should evaluate locally developed and AI-assisted ESP materials through designs that measure learners' performance in target tasks over time, investigate how ESP teachers develop expertise in materials development, and conduct systematic reviews of ESP materials research using multiple bibliographic databases.

AI USE AND DISCLOSURE

Generative AI (Claude, Anthropic) was used to help restructure and edit the manuscript for the journal template, to locate candidate sources, and to check the consistency

of citations and references. The author verified the bibliographic details and content of every source against the original publication or its official abstract, checked all content, and takes full responsibility for the article.

ETHICAL STATEMENT AND INFORMED CONSENT

This study is a review of published literature and did not involve human participants or personal data. Ethical approval and informed consent were therefore not required.

CRediT AUTHORSHIP CONTRIBUTION STATEMENT

Muhammad Andika: Conceptualization, Methodology, Investigation, Formal analysis, Writing – original draft, Writing – review & editing.

CONFLICT OF INTEREST

The author declares that he has no known competing financial interests or personal relationships that could have influenced the work reported in this article.

DATA AVAILABILITY

All sources analysed in this review are published works listed in the references. The coding sheet used for the thematic analysis is available from the corresponding author on reasonable request.

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