

Arabic Language and Medical Terminology in Education: A Systematic Review

Mior Syazril Mohamed Sapawi^{a*}, Nik Mohd Rahimi Nik Yusoff^a

^aFaculty of Education, The National University of Malaysia (UKM), Selangor, Malaysia

ABSTRACT

The use of Arabic in medical education and healthcare communication remains limited despite growing linguistic needs in Arabic-speaking populations. Issues related to translation accuracy, cultural sensitivity, and curriculum alignment hinder its integration. The objective of this study is to systematically review how Arabic medical terminology has been translated, validated, and applied in educational and clinical contexts. This systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines. Searches were conducted in May 2025 across three databases: Scopus, Web of Science (WoS), and the Education Resources Information Center (ERIC). A total of 769 records were retrieved, and 19 peer-reviewed articles were selected based on inclusion criteria. A six-point quality appraisal framework was applied to ensure methodological rigour prior to thematic synthesis. Three major themes emerged: (1) translation and cultural adaptation, highlighting the importance of expert validation and semantic accuracy; (2) psychometric evaluation, where tools such as the Postgraduate Hospital Educational Environment Measure (PHEEM) demonstrated strong internal consistency and contextual clarity; and (3) educational application, showing varied success in enhancing communication, comprehension, and learner confidence. Gaps in terminology standardisation and the limitations of automated translation tools were noted across studies. In conclusion Arabic medical terminology, when supported by structured processes and expert review, makes a meaningful contribution to education and communication. Further efforts should prioritise the development of validated terminology repositories, multidisciplinary collaboration, and the integration of Arabic-language resources into medical curricula to support inclusive and patient-centred care.

Keywords:

Arabic medical terminology, translation and cultural adaptation, medical education in Arabic, psychometric validation, healthcare communication

Corresponding Author

Mior Syazril Mohamed Sapawi
Faculty of Education, The National
University of Malaysia (UKM)
Selangor, Malaysia
Email: p121100@siswa.ukm.edu.my

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INTRODUCTION

The integration of Arabic language and medical terminology has garnered increasing attention amid global efforts to promote inclusive medical education, linguistic accessibility, and culturally responsive health communication. As Arabic-speaking populations continue to expand across diverse regions, the demand for accurate, contextually appropriate, and pedagogically sound translations of medical terms has intensified.^{1,2} This need extends beyond clinical settings to educational institutions where Arabic is the medium of instruction. However, medical terminology is inherently complex, being highly specialized and deeply rooted in Latin and Greek etymologies, which poses substantial challenges for direct translation into Arabic.^{3,5}

These linguistic difficulties are further compounded by sociocultural sensitivities and pedagogical limitations, necessitating strategies that strike a balance between linguistic precision and educational clarity. While academic interest in this area is growing, the existing literature remains fragmented, often confined to case studies or isolated issues such as lexical equivalence, transliteration accuracy, or classroom practices.^{6,7} Moreover, there is limited agreement on standardised translation protocols, resulting in inconsistencies that may compromise both educational outcomes and healthcare communication.⁸⁻¹⁰ Despite increased scholarly interest, there remains a paucity of systematic reviews that comprehensively address the translation, adaptation, and implementation of

Arabic medical terminology in education. The literature remains scattered and predominantly exploratory, lacking overarching frameworks or comparative insights.

This systematic literature review seeks to consolidate recent findings on how medical terminology has been translated and applied in Arabic contexts. It critically examines translation practices, psychometric validation of tools, and curriculum implementation strategies to address unresolved challenges. By synthesizing these insights, the review aims to propose a framework that supports the accurate, culturally relevant and educationally effective integration of medical terminology into Arabic language instruction.^{11,13}

LITERATURE REVIEW

Recent efforts to integrate Arabic medical terminology into health education reflect the growing linguistic and cultural demands of Arabic-speaking communities. Numerous studies have addressed both student and faculty perceptions towards Arabic as a medium of instruction. While cultural motivations are strong, many educators and students report limited confidence in Arabic for medical education due to inconsistent terminology and the dominance of English in assessments.^{14,15} Despite this, there is notable support for bilingual or dual-language instruction, particularly in enhancing communication with patients and reinforcing comprehension of complex concepts.¹⁶

One of the major challenges identified in the literature is the lack of consistency in Arabic translations of medical terminology. The variability in translations of abbreviations and acronyms across clinical documents poses potential risks in patient safety.⁹ Other studies have similarly reported disagreement between translators and healthcare providers regarding terminology accuracy.¹⁷ In the absence of established lexical norms, translators may resort to circumlocution, which can undermine clarity and standardisation.¹⁸

Beyond linguistic precision, the pedagogical dimension of Arabic medical terminology presents its own set of limitations. A widespread knowledge gap has been

reported among pharmacy students regarding Arabic terms, particularly in institutions with outdated curricula.¹⁹ Many students also felt unprepared for Arabic clinical communication, despite their confidence in patient interaction, largely due to minimal exposure to Arabic content during foundational training.^{20,21} These findings suggest the need for curriculum reforms that prioritise Arabic instruction in early stages and include structured language support.

Retention of medical knowledge in Arabic is closely linked to contextual application. Long-term recall of biochemistry content was found to improve when students engaged with terminology in relevant settings.²² Culturally adapted language in assessment tools has also been shown to support not only content understanding but also patient functionality.²³ However, Arabic-based digital health interventions often suffer from low engagement, especially among users with severe baseline conditions.²⁴ This implies that successful integration of Arabic in healthcare education must also consider psychological and technological adaptability.

Technological advances in Arabic health language processing show promise. AltibbiVec, a neural word embedding model trained on Arabic consultations, successfully captured the semantic nuances of medical terms.²⁵ AraBERT, a transformer-based model, has been effective in filtering misinformation in Arabic health discourse.²⁶ Nevertheless, the utility of such models is limited by the scarcity of Arabic corpora and regional dialect variation.²⁷ This further underscores the necessity of linguistically rich and standardised data for effective implementation. However, these technological initiatives remain underutilised in formal medical curricula, highlighting the disconnect between digital innovation and pedagogical practice.

Overall, the literature identifies three major gaps: the absence of standardised translation protocols, limited curricular alignment for Arabic instruction, and inadequate validation of technological tools. Addressing these gaps requires collaborative efforts between linguists, educators, and health professionals to build

comprehensive, culturally responsive and pedagogically effective frameworks for Arabic medical terminology in education.

RESEARCH QUESTIONS

To provide a structured foundation for this review, three research questions were formulated at the outset, guided by the Population Interest Context (PICO) framework. These questions were used to define the inclusion and exclusion criteria, develop the search strategy and structure the synthesis of findings. The thematic outcomes reported in the results section were not used to generate these questions but were instead derived from studies that addressed the pre-established research focus.

The PICO framework, a recognised tool for structuring qualitative evidence synthesis in health-related fields^{28,29} was employed to frame the scope of this review. Each component was defined and operationalised as shown in Table I.

Table I: PICO framework for inclusion and exclusion criteria

Component	Definition In This Review	Application To Inclusion/Exclusion
Population	Medical students, healthcare professionals, patients in Arabic-speaking contexts	Studies were included if they involved participants from medical or health-related education or services within Arabic-speaking populations
Interest	Arabic translation, adaptation, validation or use of medical terminology or tools	Studies must focus on the translation, cultural adaptation, psychometric evaluation or application of Arabic medical terminology in educational or clinical settings
Context	Educational and clinical environments using Arabic for instruction or communication	Only studies conducted in contexts where Arabic was a primary or secondary medium of communication in healthcare or education were included

No specific region or country within the Arabic-speaking world was prioritised or excluded if the study met the language and contextual relevance criteria. Studies were excluded if they focused solely on English-based tools without Arabic translation or on general linguistic topics unrelated to medical terminology.

The following research questions guided the entire review process:

1. How do Arabic-speaking healthcare professionals perceive the accuracy and cultural relevance of medical terminology translation and adaptation efforts in Arabic-speaking countries?

2. What is the psychometric validity of Arabic-translated medical education instruments among medical students and practitioners across Arabic-speaking regions?
3. How is Arabic medical terminology applied and integrated within educational curricula to enhance learning outcomes and clinical communication for students in Arabic-speaking contexts?

MATERIALS AND METHODS

This systematic literature review applied the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), which are widely recognised for enhancing transparency and rigor in research reporting.³⁰ The framework includes four stages: identification, screening, eligibility, and inclusion. For this review, three reputable databases were selected: Scopus, Web of Science (WoS), and the Education Resources Information Center (ERIC). These databases were chosen for their interdisciplinary scope and comprehensive coverage of peer-reviewed literature.

Identification

A systematic search strategy was designed using combinations of keywords such as "Arabic," "medical," "health," "terminology," and "translate." These terms were refined using academic thesauri and tailored to suit the indexing formats of each database. The finalised search strings were applied across Scopus, WoS, and ERIC in May 2025, retrieving a total of 769 records. Table II presents the detailed search strings and access information used during the identification phase

Table II: The search string

Database	Search String
SCOPUS	TITLE-ABS-KEY (arab* AND (medic* OR doc* OR health) AND (term* OR language) AND translate) AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2023) OR LIMIT-TO (PUBYEAR , 2024) OR LIMIT-TO (PUBYEAR , 2025)) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SUBJAREA , "SOC") OR LIMIT-TO (SUBJAREA , "MULT") OR LIMIT-TO (SUBJAREA , "ARTS")) AND (LIMIT-TO (OA , "all")) Date of Access: May 2025
WoS	arab* AND (medic* OR doc* OR health) AND (term* OR language) AND translate (Topic) and 2025 or 2024 or 2023 or 2022 or 2021 (Publication Years) and Article (Document Types) and English (Languages) and Linguistics or Education Scientific Disciplines or Education Educational Research or Multidisciplinary Sciences or Language Linguistics (Web of Science Categories) and Linguistics or Language Linguistics or Multidisciplinary Sciences or Education Educational Research or Education Scientific Disciplines (Web of Science Categories) and All Open Access (Open Access) Date of Access: May 2025
ERIC	arab* AND (medic* OR doc* OR health) AND (term* OR language) AND translate nacpubyearmin:2021 pubyearmax:2025 Date of Access: May 2025

Table III: Number and details of primary studies database

NO	AUTHOR	TITLE	YEAR	JOURNAL	SCOPUS	WoS	ERIC
1.	Alfakhry G.; Mustafa K.; Khwanda R.; Alhaffar M.; Alhomsi K.; Kodmani R. ³¹	Translation, Cultural Adaptation and Linguistic Validation of The Postgraduate Hospital Educational Environment Measure into Arabic	2024	BMC Medical Education	/	/	
2.	Almahasees Z.; Meqdadi S.; Albudairi Y. ³²	Evaluation Of Google Translate in Rendering English Covid-19 Texts into Arabic	2021	Journal of Language and Linguistic Studies	/		
3.	Alaska Y.A.; Alqahtani N.M.; Al Zahrani A.K.; Alshahri R.; Malyani R.Z.; Alkutbe R.B. ³³	Evaluating The Content and Face Validity of Arabic-Translated Patient Measures of Safety Survey PMOS-30	2024	PLoS ONE	/		
4.	Mansour M.; Hasan A.A.; Alafafsheh A. ³⁴	Psychometric Evaluation of The Arabic Version of The Irish Assertiveness Scale Among Saudi Undergraduate Nursing Students and Interns	2021	PLoS ONE	/		
5.	Albabbain B.; Paudyal V.; Cheema E.; Bawazeer G.; Alqahtani A.; Bahatheq A.; Shuweihdi F.; Hadi M.A. ³⁵	Translation, Cultural Adaptation and Validation of Patient Satisfaction with Pharmacist Services Questionnaire (PSPSQ) 2.0 Into The Arabic Language Among People with Diabetes	2024	PLoS ONE	/	/	
6.	Alzain E.; Nagi K.A.; Algobaei F. ³⁶	The Quality of Google Translate and ChatGPT English to Arabic Translation: The Case of Scientific Text Translation	2024	Forum for Linguistic Studies	/		
7.	Alaqil A.I.; Gupta N.; Alothman S.A.; Al-Hazzaa H.M.; Stamatakis E.; del Pozo Cruz B. ³⁷	Arabic Translation and Cultural Adaptation of Sedentary Behavior, Dietary Habits and Preclinical Mobility Limitation Questionnaires: A Cognitive Interview Study	2023	PLoS ONE	/		
8.	Awwad O.; AlMuhaissen S.; Al-Nashwan A.; AbuRuz S. ³⁸	Translation And Validation of The Arabic Version of The Morisky, Green and Levine (MGL) Adherence Scale	2022	PLoS ONE	/	/	
9.	ElHafceez S.A.; Elbarazi I.; Shaaban R.; ElMakhzangy R.; Aly M.O.; Alnagar A.; Yacoub M.; El Sach H.M.; Eltaweeel N.; Alqutub S.T.; Ghazy R.M. ³⁹	Arabic Validation and Cross-Cultural Adaptation of the 5C Scale for Assessment Of COVID-19 Vaccines Psychological Antecedents	2021	PLoS ONE	/		
10.	Muller, R; Konecny, LT ⁴⁰	Patient Perceptions of The Readability and Helpfulness of Bilingual Clinical Forms: A Survey Study	2023	BMC Medical Education		/	
11.	Farag, HF ⁴¹ ; Sultan, EA; Elrewany, E; Abdel-Aziz, BF ⁴¹	Arabic Version of The Australian Type 2 Diabetes Risk Assessment Tool (AUSDRISK): Translation and Validation	2022	BMC Research Notes		/	
12.	Sharkas, H ⁴²	Nominalization In Arabic Translations of Patient Information Leaflets	2024	Translation & Interpreting-The International Journal of Translation and Interpreting Jordan Journal of Modern Languages & Literature		/	
13.	Alduhaim, A; Alkhaldy, M ⁴³	Medical Discourse Translation during COVID-19: A Case Study of Translating Medical Discourse into Arabic	2023	Jordan Journal of Modern Languages & Literature		/	
14.	Bahadi, A; Lagtarna, H; Benbria, S; Zajjari, Y; Elkabbaj, D; Zemraoui, N ⁴⁴	Physical Activity in Sahara Moroccan Hemodialysis Patients	2021	BMC Research Notes		/	
15.	Alfakhry, G; Kodmani, R; Almasri, IA ⁴⁵	Psychometric Properties of The Arabic Version of PHEEM Applied on A Sample of Medical Residents in Syria	2024	BMC Medical Education		/	
16.	Mohamed, E; Sarwar, R; Mostafa, S ⁴⁶	Translator Attribution for Arabic Using Machine Learning	2023	Digital Scholarship in The Humanities		/	
17.	Alharbi, MT; Ateef, M; Alanazi, A; Alzhrani, M ⁴⁷	Cross-Cultural Adaptation and Validation of The Arabic Version of The Knee and Hip Health-Related Quality of Life (Mini-OAKHQOL) Questionnaire in Male Saudi Patients with Osteoarthritis: A Methodological Observational Design	2024	PEERJ		/	/
18.	Chbab, H ⁴⁸	Translation Procedures for Medical Neologisms and Their Contribution to The Enrichment of Arabic Medical Terminology	2024	Hermeneus		/	
19.	Temehy, B; Soundy, A; Sahely, A; Palejwala, Y; Heath, J; Rosewilliam, S ⁴⁹	Exploring The Needs of Stroke Patients After Discharge from Rehabilitation Centres in Saudi Arabian Communities: An IPA Qualitative Exploratory Study Design	2023	PLoS ONE		/	

Screening

To ensure consistency and relevance, a set of predefined inclusion and exclusion criteria was applied during the screening phase. Only full journal articles published in English between 2021 and 2025 were included in this review. Non-journal sources such as conference proceedings, book chapters, reviews, and unpublished materials were excluded. Additionally, studies that were still in press or not yet finalised were removed. After excluding 50 duplicates and filtering out 467 irrelevant records based on titles and abstracts, a total of 252 articles were retained for full-text assessment.

Eligibility

The remaining 252 records underwent full-text assessment to determine their alignment with the review's objectives. Each study was examined for thematic relevance based on its title, abstract, and complete

content. Articles that did not address any of the core areas, such as Arabic medical terminology, translation practices, pedagogical integration or clinical communication, were excluded. The eligibility process focused on selecting studies that provided substantive data or analysis related to these domains.

As a result, 19 articles were deemed suitable and included in the final synthesis. The final pool of 19 articles was drawn from three primary databases selected during the identification phase. Table III summarises the distribution of these studies by database, providing an overview of their source and accessibility.

The overall screening process, from initial identification to final inclusion, is illustrated in the PRISMA flow diagram shown in Figure 1.

Data Abstraction and Analysis

Thematic analysis was conducted using a six-point quality assessment framework adapted from previously established models.^{28,50} This framework comprised six evaluation criteria: clarity of study aim, methodological strength, conceptual definition, relevance, comparative insight, and acknowledgement of limitations. Only studies that scored above 3.0 were retained for further synthesis. This procedure ensured consistency and methodological credibility across the selected literature before thematic classification.

Bibliographic management and citation formatting were conducted using Mendeley, which ensured consistency in referencing across the manuscript. Thematic grouping and extraction of key information were performed manually using Microsoft Excel, allowing for structured data abstraction aligned with the predefined research questions and quality appraisal framework.

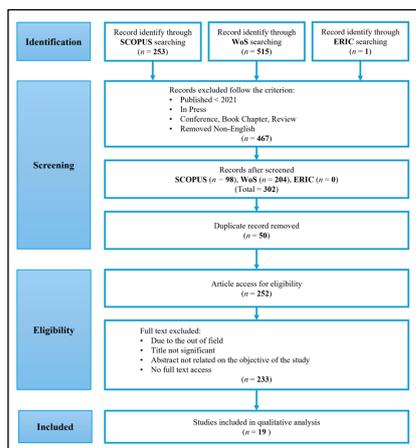


Figure 1: PRISMA 2020 flow diagram illustrating the identification, screening, eligibility and inclusion process.

RESULT AND FINDING

Thematic findings derived from the selected studies are structured using the PICO framework, followed by a quality appraisal to ensure methodological rigour.

Thematic Findings Based on PICO Framework

Based on the PICO structure applied in this review, three major themes were identified across the selected studies: (1) translation and cultural adaptation of Arabic medical terminology; (2) psychometric validation and application in Arabic-speaking healthcare and education;

and (3) integration of Arabic medical terminology in educational and clinical settings.

Translation and Cultural Adaptation of Arabic Medical Terminology

The translation and cultural adaptation of medical terminology into Arabic has become a central focus in advancing healthcare communication and medical education within Arabic-speaking regions. Multiple studies emphasize the importance of rigorous translation protocols such as forward and backward translation, expert validation, and contextual adaptation to ensure medical tools remain semantically precise and culturally appropriate.^{31,35,37} One notable example is the Arabic version of the Postgraduate Hospital Educational Environment Measure (PHEEM), which demonstrated strong content validity and contextual clarity after structured translation tailored to the Syrian context.³¹ The Patient Satisfaction with Pharmacist Services Questionnaire (PSPSQ) also showed high internal consistency (Cronbach's alpha 0.99) following cultural and linguistic adaptation for diabetic patients.³⁵ Likewise, the Arabic version of the Morisky, Green and Levine (MGL) adherence scale exhibited strong construct validity, confirming its reliability in measuring patient behaviour and medication adherence.³⁸

Further validation studies, including those involving the Mini Osteoarthritis Knee and Hip Quality of Life (Mini-OAKHQOL) instrument, ensured sociocultural alignment for Saudi osteoarthritis patients, reaffirming the importance of contextualised language in clinical assessments.⁴⁷ Tools measuring lifestyle and dietary behaviours also underwent cognitive interviewing to enhance regional comprehensibility and usability.³⁷ In addition to standard instruments, various translation strategies have been employed to generate Arabic medical neologisms. These include the use of calques, semantic extension, and lexical borrowing, particularly during health emergencies, to enrich terminology while preserving clarity and domain specificity.⁴⁷

Overall, the findings confirm that effective translation in medical contexts requires more than lexical accuracy.

Cultural alignment and structured validation are essential to ensure that Arabic-translated tools serve both educational and healthcare objectives across diverse regional settings.

Psychometric Evaluation and Application in Arabic Medical Education

The psychometric evaluation of Arabic translated instruments is crucial for establishing their reliability and relevance in medical education and health research. Numerous studies have confirmed that these tools, when appropriately adapted, offer valid measurement constructs for Arabic-speaking populations. For instance, the Arabic version of the Irish Assertiveness Scale demonstrated strong internal consistency (Cronbach's alpha 0.80) and a content validity index of 0.93 among Saudi nursing students.³⁴ The 5C Scale of Psychological Antecedents to Vaccination, which measures five key dimensions (Confidence, Complacency, Constraints, Calculation and Collective responsibility) was validated in Egypt, Saudi Arabia and the United Arab Emirates. The scale showed strong internal reliability (alpha ≥ 0.7) and confirmed factor structure validity.³⁹

The Arabic version of the MGL adherence scale also displayed solid psychometric properties, showing high internal consistency and construct validity when used among patients with chronic conditions.³⁸ Similarly, the PHEEM instrument, previously culturally adapted, underwent psychometric validation in Syria. The results confirmed excellent internal reliability (Cronbach's alpha 0.938) and a five-factor model explaining 43 percent of the variance, establishing its suitability for assessing clinical learning environments. Studies on lifestyle-related tools, such as sedentary behaviour and dietary habit questionnaires, highlighted the importance of cultural alignment and cognitive testing during the translation process. These tools were validated through cognitive interviews to ensure linguistic clarity and conceptual relevance in Saudi contexts.³⁷

Moreover, evaluation of machine translation tools revealed limitations in accuracy. Although Google Translate outperformed ChatGPT in terms of technical

precision, both platforms exhibited notable grammatical and semantic inconsistencies, thereby underscoring the critical need for human oversight in Arabic medical translation.^{32,36} These findings underscore the importance of validation approaches that align psychometric rigour with regional sociolinguistic realities, ensuring practical utility across education and healthcare. Rigorous adaptation further enhances credibility and fosters broader acceptance of Arabic in medical and academic discourse.

Arabic Medical Education and Terminology Applications

Beyond validation, the application of Arabic-translated medical tools across educational and clinical contexts has yielded valuable insights regarding their usability, clarity and impact on both patient care and learning outcomes. Beyond enhancing patient-provider communication, these instruments also enrich the linguistic inclusiveness and pedagogical depth of Arabic medical education. One prominent example is the Arabic version of the Patient Measures of Safety Survey (PMOS-30), used to assess patient perceptions of healthcare safety. Following translation and testing, the tool demonstrated high face validity and clarity after cognitive revision, highlighting its value in improving patient engagement and institutional safety practices.³³ Similarly, the Arabic version of the MGL adherence scale proved reliable for evaluating medication adherence, reinforcing its role in clinical monitoring.³⁸

Several studies have examined the effectiveness of patient-facing materials. Bilingual clinical forms were generally perceived by patients as helpful in enhancing understanding and communication within healthcare settings.⁴⁰ However, excessive nominalisation in Arabic translations of patient information leaflets was found to reduce readability, highlighting the need for simplification strategies when addressing non-specialist audiences.⁴² Machine translation tools such as Google Translate and ChatGPT were also tested for rendering medical content into Arabic. Although Google Translate demonstrated superior technical accuracy, both tools produced notable grammatical and semantic errors.^{32,36} These limitations

underscore the importance of human oversight and contextual refinement, particularly in the translation of sensitive medical materials.

In response to the COVID-19 pandemic, numerous Arabic medical neologisms emerged to address newly introduced health concepts. These terms were often constructed through descriptive translations or Arabicised forms, tailored to meet cultural and linguistic expectations.⁴³ Translation approaches such as calques and lexical borrowing have also been employed to expand the Arabic medical lexicon while preserving semantic clarity.⁴⁸ Collectively, these strategies affirm the value of Arabic in health communication and education, while highlighting the ongoing need for culturally sensitive adaptation, empirical validation and user-centred design in both clinical and educational materials.

Quality Appraisal of Selected Studies

The quality of the selected studies was assessed using a structured six-point appraisal framework adapted from Kitchenham and Charters²⁸ and Anas Abouzahra et al.⁵⁰

This framework provided a structured evaluation of methodological and conceptual rigour before inclusion into the thematic synthesis.

The six criteria used for appraisal were as follows:

- QA1 – Clarity of the study’s aim
- QA2 – Methodological strength
- QA3 – Conceptual definition
- QA4 – Relevance to the field
- QA5 – Comparative insight
- QA6 – Acknowledgement of study limitations

The results of the quality appraisal for the 19 selected studies are summarised in Table IV. Eighteen studies attained the maximum score of 6.0 across all quality indicators, while one study (PS1) received a slightly lower score of 5.5 due to a limited discussion of its methodological limitations. Overall, the included literature demonstrates a high degree of methodological consistency, reinforcing the credibility and analytical soundness of the thematic synthesis. Table IV below provides a detailed breakdown of individual quality scores

Table IV: Quality assessment of selected studies based on systematic review criteria (QA1–QA6)

Primary Study	Title	QA1	QA2	QA3	QA4	QA5	QA6	Total Mark	Percentage (%)
PS1	Translation, Cultural Adaptation and Linguistic Validation of The Postgraduate Hospital Educational Environment Measure into Arabic	1	1	1	1	1	0.5	5.5	91.67
PS2	Evaluation Of Google Translate in Rendering English Covid-19 Texts into Arabic	1	1	1	1	1	1	6	100
PS3	Evaluating The Content and Face Validity of Arabic-Translated Patient Measures of Safety Survey PMOS-30	1	1	1	1	1	1	6	100
PS4	Psychometric Evaluation of The Arabic Version of The Irish Assertiveness Scale Among Saudi Undergraduate Nursing Students and Interns	1	1	1	1	1	1	6	100
PS5	Translation, Cultural Adaptation and Validation of Patient Satisfaction with Pharmacist Services Questionnaire (PSPSQ) 2.0 Into the Arabic Language Among People with Diabetes	1	1	1	1	1	1	6	100
PS6	The Quality of Google Translate and ChatGPT English to Arabic Translation: The Case of Scientific Text Translation	1	1	1	1	1	1	6	100
PS7	Arabic Translation and Cultural Adaptation of Sedentary Behavior, Dietary Habits and Preclinical Mobility Limitation Questionnaires: A Cognitive Interview Study	1	1	1	1	1	1	6	100
PS8	Translation And Validation of The Arabic Version of The Morisky, Green and Levine (MGL) Adherence Scale	1	1	1	1	1	1	6	100
PS9	Arabic Validation and Cross-Cultural Adaptation of the 5C Scale for Assessment Of COVID-19 Vaccines Psychological Antecedents	1	1	1	1	1	1	6	100
PS10	Patient Perceptions of The Readability and Helpfulness of Bilingual Clinical Forms: A Survey Study	1	1	1	1	1	1	6	100
PS11	Arabic Version of The Australian Type 2 Diabetes Risk Assessment Tool (AUSDRIK): Translation and Validation	1	1	1	1	1	1	6	100
PS12	Nominalization In Arabic Translations of Patient Information Leaflets	1	1	1	1	1	1	6	100
PS13	Medical Discourse Translation during COVID-19: A Case Study of Translating Medical Discourse into Arabic	1	1	1	1	1	1	6	100
PS14	Physical Activity in Sahara Moroccan Hemodialysis Patients	1	1	1	1	1	1	6	100
PS15	Psychometric Properties of The Arabic Version of PHEEM Applied on A Sample of Medical Residents in Syria	1	1	1	1	1	1	6	100
PS16	Translator Attribution for Arabic Using Machine Learning	1	1	1	1	1	1	6	100
PS17	Cross-Cultural Adaptation and Validation of The Arabic Version of The Knee and Hip Health-Related Quality of Life (Mini-OAKHQOL) Questionnaire in Male Saudi Patients with Osteoarthritis: A Methodological Observational Design	1	1	1	1	1	1	6	100
PS18	Translation Procedures for Medical Neologisms and Their Contribution to The Enrichment of Arabic Medical Terminology	1	1	1	1	1	1	6	100
PS19	Exploring The Needs of Stroke Patients After Discharge from Rehabilitation Centres in Saudi Arabian Communities: An IPA Qualitative Exploratory Study Design	1	1	1	1	1	1	6	100

DISCUSSION

This systematic review identified three interrelated themes in the integration of Arabic medical terminology: structured translation and cultural adaptation, psychometric validation of educational tools, and the application of translated resources in clinical and instructional settings. These themes reflect both the advancement and the persistent challenges in positioning Arabic as a viable medium for medical education and healthcare communication. Translation studies consistently revealed that direct lexical conversion is inadequate. Instead, high-quality outcomes require expert validation, cultural contextualisation, and iterative testing to ensure semantic fidelity and functional usability. The Arabic versions of PHEEM and PSPSQ 2.0, for instance, demonstrated strong internal consistency and contextual relevance, confirming the effectiveness of structured adaptation.^{31,35} Nonetheless, inconsistencies in translation quality across instruments signal the need for centralised protocols or standardised glossaries to enhance semantic coherence.

Psychometric validation findings reinforced the methodological credibility of Arabic-adapted tools. Instruments such as the MGL adherence scale, the Irish Assertiveness Scale, and the 5C vaccine scale exhibited robust reliability and construct validity, affirming the capacity of Arabic to serve as a stable language for clinical and behavioural assessments.^{34,38,39} However, the requirement for substantial item-level modifications in several tools highlights the limitations of direct translation and underlines the critical role of localised validation. Cognitive interviews and factor analyses were instrumental in identifying latent conceptual discrepancies and improving item clarity.^{37,45}

Several limitations should be acknowledged. Firstly, the review only included studies published in English, which may have excluded relevant Arabic-language research, introducing potential bias. Secondly, although three major databases (Scopus, WoS and ERIC) were searched, relevant studies indexed in repositories such as PubMed or regional Arabic databases may have been overlooked. Thirdly, the review was restricted to publications between

2021 and 2025, potentially omitting earlier foundational works or newer studies not yet indexed. Lastly, the focus was limited to full-text peer-reviewed journal articles, excluding conference proceedings, grey literature, and in-press publications, which may contain additional insights.

The real-world application of Arabic medical terminology produced varied outcomes. Patient-facing materials such as bilingual forms and Arabic-language leaflets were generally well-received,⁴⁰ although readability challenges, particularly those caused by nominalisation, remained.⁴² Automated translation platforms like Google Translate and ChatGPT demonstrated some utility, yet continued to exhibit semantic and grammatical shortcomings, reaffirming the irreplaceable role of human oversight in sensitive medical contexts.^{32,36}

During the COVID-19 pandemic, the creation of Arabic medical neologisms illustrated the language's adaptability in responding to emergent health discourse.^{43,48} While such innovation enhances relevance, it also necessitates systematic regulation and institutional alignment to prevent fragmented usage. Overall, the findings suggest that Arabic can function effectively in medical domains when supported by empirical validation, professional collaboration, and sustained curricular integration. Future research and policy efforts should prioritise the development of centralised term banks, cross-national studies, and hybrid strategies that blend technology with expert linguistic review.

CONCLUSION

This review highlights the growing significance of integrating Arabic language and medical terminology into health education and clinical communication. Across diverse studies, three core areas emerged: translation and cultural adaptation, psychometric validation, and real-world application. The findings confirm that accurate translation alone is insufficient without cultural alignment and empirical validation. Tools such as PHEEM, PSPSQ, and the MGL scale, once adapted and tested, proved effective in Arabic-speaking contexts, supporting their broader adoption in both educational and clinical

environments. Despite progress, notable challenges remain, including inconsistency in terminology, limited standardization protocols, and the continued reliance on English in assessments. Machine translation tools show potential but are not yet reliable enough to replace human oversight, especially in medical settings.

To strengthen the integration of Arabic in medical fields, collaborative initiatives between linguists, educators, and healthcare professionals are essential. Priority should be given to establishing national or regional repositories of validated Arabic medical terms to promote consistency and ease of reference. Educational institutions are also encouraged to embed Arabic-based tools and validated instruments into medical curricula through structured language planning. Furthermore, interdisciplinary training programmes should be introduced to equip educators and translators with the necessary linguistic and pedagogical skills, thereby supporting sustainable and context-appropriate medical communication in Arabic.

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CONFLICT OF INTEREST

The authors declare no conflict of interest in the conduct and reporting of this systematic review.

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