Patient Education and Counseling 137 (2025) 108784

Contents lists available at ScienceDirect

Patient Education and Counseling

journal homepage: www.journals.elsevier.com/patient-education-and-counseling

Physiotherapist-targeted strategies and tools for recognising patients with limited health literacy and adapting physiotherapeutic communication: A scoping review

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ARTICLE INFO

Keywords:
Limited health literacy
Physical therapy
Communication

ABSTRACT

Objective: To provide an overview of available strategies and tools that support physiotherapists to recognise patients with LHL and to adapt the physiotherapeutic communication during the diagnostic phase.
Methods: PubMed, Embase, CINAHL and PsycINFO were searched for publications appearing between 2000 and June 2024. Additional grey literature was searched up till October 2022. Studies were included if they described strategies and tools aimed at supporting communication with patients with Limited Health Literacy in physiotherapy. Exclusion criteria focusing on general health literacy prevalence, behavioural interventions, or basic communication training.
Results: Out of the 9960 unique studies identified by our literature searches, 314 full-text studies were assessed and 98 met the inclusion criteria. The data on strategies and tools were extracted into the following six categories: verbal communication (n = 3), written communication (n = 34), digital device (n = 9), questionnaire (n=19), interpreter (n = 22), and other media (n = 2). Within these categories, tools and strategies were further classified based on the communication aims. Some tools and strategies were uncategorisable.
Conclusion: While various strategies and tools exist for recognising patients with limited Health Literacy, they are often generic and not tailored to the physiotherapeutic context. This scoping review identifies a gab in physiotherapeutic approaches, particularly on those that go beyond information provision.
Practice implications: To improve communication in physiotherapy practice, there is a need for the development of tailored strategies and tools that reflect the specific dynamic of the physiotherapeutic process. We recommend engaging in design-based research that involves both patient and physiotherapist to co-create tools and strategies. In the meantime, physiotherapists are advised to use general communication strategies and tools and refer to our resources to select tools that best align with their specific goals.

1. Introduction

Limited Health Literacy (LHL) has been associated with poorer health outcomes [1]. At least once per week, physiotherapists and other health care providers, face challenges in adapting their communication towards patients with different levels of Health literacy [2,3]. Health literacy is defined by Nutbeam's Health Literacy framework as the ability to find, understand, and use health information and services to make informed decisions about personal health [4]. The abilities to access, comprehend, evaluate, and apply health-related information are considered crucial dimensions of health literacy and are less accessible

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https://doi.org/10.1016/j.pec.2025.108784
Received 20 January 2025; Received in revised form 28 March 2025; Accepted 9 April 2025
Available online 17 April 2025

Abbreviations

CHAT	Conversational Health Literacy Assessment Tool
GLIN	Grijze Literatuur Nederland
HALS	Health Activities Literacy Scale
HLQ	Health Literacy Questionnaire
HLS-EU	European Health Literacy Survey
J-HKT	Japanese Health Knowledge Test
KHLS	Korean Health Literacy Scale
LEP	Limited English Proficiency
LHL	Limited Health Literacy
MART	Medical Achieving Reading Test
NVS	Newest Vital Sign
PEMAT	Patient Education Materials Assessment Tool
PRISMA-ScR	Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for scoping reviews
REALM	Rapid Estimate of Adult Literacy in Medicine
SILS	Single Item Literacy Screening
s-MHLS	short Mental Health Literacy Scale
TOFHLA	Test of Functional Health Literacy
WRAT 3	Wide Range Achievement Test 1993

or absent in patients having LHL [5,6].

Patients having LHL are more likely to face an increased prevalence of chronic diseases, hospitalisation, use of emergency care, lower use of preventive care, and more doctor visits per year [7–10]. In line with this, LHL is more common among persons with lower incomes and higher ages [11]. Persons with lower income, higher ages, and/or chronic diseases tend to utilise health care professionals, like physiotherapists, more frequently [6,12,13]. Given the latter prognostic indicators linked to LHL, it is evident that LHL results in a substantial financial and social burden on society.

One critical determinant of successful and efficient treatment is the establishment of a strong therapeutic alliance between the patient and the therapist. Such an alliance is essential for achieving optimal treatment adherence [7]. A person-centered communication approach, where patient participation is actively facilitated by the physiotherapist during the consultation, has been shown to augment the strength of the therapeutic alliance [14–16]. However, communication barriers can arise in interactions between physiotherapists and patients with LHL, impacting shared decision-making. For instance, differences in communication styles, limited adaption to the patient's needs, and challenges in structuring health-related discussions may contribute to miscommunication [2,3,17,18]. Such a miscommunication, if not adequately addressed, can weaken the patient-therapist relationship and affecting treatment adherence and physiotherapy outcomes [2,3,19,20].

Improved communication—and consequently, a stronger therapeutic alliance, enhanced patient knowledge, better medication adherence, and improved disease control—can be achieved through the use of communication strategies and tools specifically designed for communicating with patients with lower health literacy [14]. Communication strategies are detailed approaches and methods to effectively convey and receive information to achieve success in communication, e.g. plans and tips for communicating with patients having LHL (e.g. using plain language or a large font-size) [21]. A communication tool, defined as a physical aid (e.g. object or device), is aimed to enhance communication with patients [21].

Numerous strategies and tools have been developed to improve communication between health care providers and their patients; a few of them may be very useful for physiotherapists. One example is the use of short sentences and avoidance of medical jargon [22]. Unfortunately, physiotherapists rarely use these tools or any of the recommended communication strategies while interacting with patients with LHL [20]. One possible explanation for this gap may be the difficulties encountered by physiotherapists in finding these communication strategies and tools [2,3].

Another explanation may be that physiotherapists do not recognise LHL in patients [1,23]. Recognising the LHL of a patient is especially important during the diagnostic phase. Identifying LHL in patients has proven to be challenging, because patients may not consistently reveal their limitations due to the social stigma associated with health literacy shortcomings [24–26]. In the diagnostic phase (first consultation), physiotherapists collect information from- and provide guidance to patients, fostering a collaborative decision-making process, and establishing a solid foundation for the therapeutic alliance [27]. While communication strategies may be relevant across multiple health care disciplines, physiotherapists operate within a unique context where treatment often involves repeated patient interactions, physical demonstrations, and long-term engagement, making tailored communication approaches essential [28].

Although various communication strategies and tools exist to enhance interactions with patients with LHL, their implementation in physiotherapy practice remains limited [20]. Physiotherapists often struggle to identify LHL, and even when recognized, they face challenges in selecting and effectively applying appropriate tools [2,3]. Existing tools and strategies are frequently to general or not tailored to the specific needs of physiotherapists. To bridge this gap, there is a need for a clear and accessible overview of available resources to support physiotherapists in adapting their communication strategies during the diagnostic phase. Therefore, this study aimed to provide physiotherapists with an overview of the strategies and tools available that support physiotherapists in recognising patients with LHL and to adapt their physiotherapeutic communication during the diagnostic phase.

2. Methods

We conducted a scoping review, with the methodology of Arksey and O'Malley, for this study to gather a wide range of data on the research question [29]. With this scoping review, we aimed to summarise the available strategies and tools for physiotherapists toward first, recognising LHL and second, to adapt physiotherapeutic communication during the diagnostic phase. This scoping review was registered in the Open Science Framework on 30 November 2022 [30]. The Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for scoping reviews (PRISMA-ScR) checklist was used as the reporting guideline for this study [31].

2.1. Eligibility criteria

In this scoping review, we focused on the diagnostic phase in physiotherapy. During this phase, physiotherapists perform an initial examination to establish a diagnosis and treatment plan. Communication has an important role in this physiotherapeutic process. During communication, the physiotherapist ensures the provision of relevant, clear, and concise written and verbal information to the patient [28]. Within this diagnostic phase, physiotherapists employ targeted communication to achieve specific communication aims. To clarify these communication aims, this scoping review used the six communication aims described by Haes and Bensing et al. (Table 1) [27].

Table 1
Communication aims by Haes and Bensing[28].

	Aims and description
Fostering the relationship	Build a good and effective relationship
Gathering information	Gather an adequate diagnoses
Information provision	Provide good information
Decision making	Make decision based on information
Enabling disease and treatment related behavior	Help by disease and treatment-related behavior
Responding to emotions	Supporting the patient

Studies were eligible for inclusion in this review if the data included written or verbal strategies and tools designed for patients with LHL designed for; 1) recognising LHL or; (2) incorporating the communication aims described by Haes and Bensing et al. (Table1) or; (3) patient training in health literacy. In addition, the strategies and tools had to be usable in the diagnostic phase. Studies were included from the period between 2000 and June 2024.

The focus of this study is not on training basic communication skills or the prevalence of LHL, but rather on strategies and tools aimed at supporting LHL. Therefore, the exclusion criteria were as follows: (1) studies including patients with cognitive impairment or psychiatric disorders; (2) studies including patients < 18 years; (3) studies focused on treatment; (4) studies on student training; (5) survey studies; (6) studies published in languages other than Dutch, English and German. To extra the most reliable and verifiable data, other studies (e.g. protocols, author opinions, conference abstract, missing full text or publication not found) were excluded.

2.2. Information sources and searches

Studies were retrieved from Pubmed, Embase, CINAHL and PsycINFO. These databases were initially searched from their inception up till 13 October 2021, and these searches were later updated in November 2022 and June 2024. An information science specialist and a researcher (JO) collaborated to combine the main search terms and created specific search queries for every database. See Supplementary Material file-1 for the full search strategy with the Boolean operators, keywords and limitations applied to the search strategy.

Grey literature was searched till October 2022 and updated in June 2024 through EBSCO Open Dissertations, Proguest, Grey Literature the Netherlands (GLIN) and Narcis (see Supplementary Material file-2).

2.3. Data selection

All studies were entered in Ryyan online software [32]. After duplications were removed, two researchers (NB and SL) independently reviewed the studies for eligibility based on title and abstract in a six-step process as follows: (1) to enhance the inter-rater reliability of the decision to include or exclude any study, an additional step was taken, and the year 2021 was assessed first by screening studies published in 2021 by title and abstract; (2) the titles and abstracts of the studies reviewed for the year 2021 were discussed to resolve disagreements and clarify the inclusion and exclusion criteria; (3) after consensus had been achieved among the reviewers about the inclusion and exclusion criteria for the year 2021, the studies appearing in the years 2022 and those published in 2020 and earlier were independently screened for title and abstract content; (4) disagreements were discussed and resolved; (5) both researchers screened all full text studies independently and; (6) the reviewed studies were discussed to resolve any disagreements. Disagreements between reviewers (NB &SL) were firs discussed in detail to reach consensus. If consensus could not be achieved, the specific points of disagreements were documented and presented to the third researcher (JO), who independently reviewed the data and provided a final decision. This process ensured consistency and objectivity in the selections of the studies. Additional grey literature was reviewed by one researcher (NB).

2.4. Data extraction

For each study, the author(s), year of publication, country of publication, type of study, patients, profession of health care providers, name and description of tool or strategy, type of tool, and communication goals were abstracted, as per guidance for scoping review procedures [29]. Included studies were charted using a data extraction form newly developed by one reviewer (NB) in Excel (version 2211). Data extraction was conducted by one reviewer (NB) and checked by another researcher (SL). Disagreements between researchers (NB and SL) were resolved.

2.5. Synthesis of results

The strategies and tools present in the selected studies were extracted into the following six categories: verbal communication, written communication, digital device, questionnaire, interpreter, and other media. Additionally, they were categorised according to the communication aims during the diagnostic phase (Table 1) [27]. Due to the difficulties in recognising patients with LHL, recognising LHL was added as a category in strategies and tools. If a strategy or tool was applicable to more than two aims, it was placed in the column uncategorisable. If a strategy or tool was applicable to only one or two communication aims, it was placed in both aims.

3. Results

3.1. Selection of studies

A total of 9960 unique studies were initially selected (Fig. 1) but only 105 studies were finally deemed eligible for inclusion in this review. The most frequently applied exclusion criterion was the absence of health literacy strategies and tools (n = 117): this exclusion criterion was based on the objectives of this review, as outlined in the Introduction section. No new studies were identified after conducting a search of the grey literature. An overview of the included studies is provided in Supplementary Material file-3.

The strategies and tools categories identified in the selected studies are as follows: verbal communication (n = 33), written communication (n = 34), digital devices (n = 11), questionnaires (n = 1), interpreters (n = 22), and other media (n = 2).

In accordance with the predefined communication aims (Table 1), the provision of information to the patient (n = 51) emerged as the most frequent communication aim in the included communication strategies and tools (Table 2). Facilitating disease and treatment related behaviour (n = 0) and responding to emotions (n = 0) were not addressed by the strategies and tools identified, as shown in Table 2.

3.2. Verbal communication

Thirty-three studies regarding verbal communication are included in this scoping review [2,21,33–63]. Fifteen of these studies are included for information provision and the teach back method was the focal point in these studies [2,34,37,39,41,42,44,46,50,53,56–58,60,63]. This method ensures the transfer of necessary and intended information to patients. Healthcare providers ask patients to rephrase the information in their own words, thus confirming understanding.

One study is included for information provision and fostering a relationship that used the oral literacy demand framework [55]. Four studies were included for information provision and gathering information [2,51,59,61]. One of them is the “Ask me 3” method which encourages patients to ask three specific questions in order to better understand their health conditions: 1) what is my main problem, 2) what do I need to do, and 3) why is it important for me to do this. A similar approach, the “Ask3Teach3” method, was described in another study by Pajaro et al., focusing on teaching and reviewing three essential components of new patient medication [47]. One study was included for shared decision making: it described a shared decision framework to support shared decision making with examples and tools [43].

Further, for improving communication between healthcare providers and patients with Limited English Proficiency (LEP), one study described an information sheet with communication tips [33]. A transformative learning method, designed to change existing beliefs and perspectives among patients with LHL, was explored in another study [45].

Fourteen studies were included for basic general communication tips

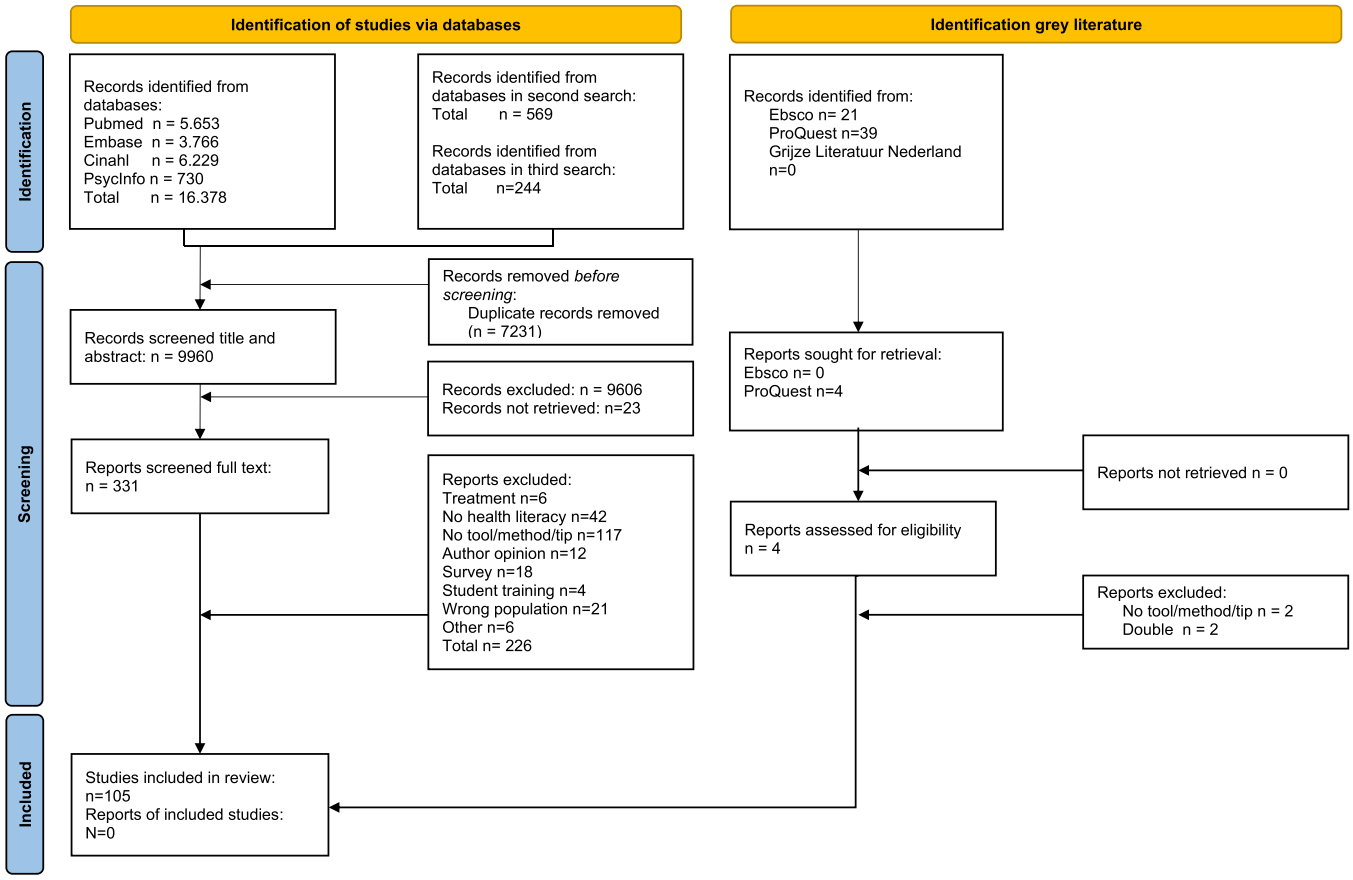

Fig. 1. Flowchart.

Table 2
Included strategies and tools divided in categories and communication aims.

	Fostering the relationship	Gathering information	Information provision	Decision making	Enabling disease and treatment related behavior	Responding to emotions	Recognizing	Uncategorizable
Verbal communication	1	4	20	1				14
Written communication		2	20	5				13
Digital devices			7					3
Questionnaires							19	
Interpreters								22
Other media			2					
Total	1	6	49	6	0	0	19	52

for verbal interaction. These tips are summarised in Table 3 [2,21,34,37,38,41,45,49,53–55,58,60,63].

3.3. Written communication

Thirty-four studies involving written communication tools and strategies are included in this scoping review [2,21,34,36,37,39,49,58,62,64–88]. The main characteristics of seventeen of these tools and strategies were use of plain language and the inclusion of pictograms, icons or photographs for information provision [21,37,68,69,73,75–80,82,83,85–88]. Bailey et al. designed a "ConcordantRx" instruction sheet for creating readable information and four methods for assessing the readability of these materials, including the Patient Education Materials Assessment Tool (PEMAT), Gunning Fog index, and the Smog and Flesh Reading Ease score are described [48,64,67].

Two tools and strategies are included for both information provision and gathering information, using dual language cards and the Ask Me3 pamphlet to prepare patients for a visit by their doctor [81,85]. Five tools and strategies are included for shared decision-making [65,66,78,81,85]. These tools and strategies used booklets and printed information sheets with icons and plain language to convey information about different health topics.

Thirteen studies are included for general writing tips, yielding a total of 22 tips. These tips are included in Table 4[2,18,21,34,36,41,49,58,70,72,80,82,84].

3.4. Digital devices

Eleven studies involving digital devices were included in this scoping review [89–99]. Seven studies included strategies and tools for information provision [89,90,95–99]. Two tools targeted LEP patients and delivered information in different languages [90,96]. The remaining

Table 3
Communication tips for verbal communication.

Use plain everyday language	35, 42, 50, 54, 61
Do not use medical jargon	18, 35, 38, 54, 61, 64
Speak slowly	35, 38, 39, 50, 54, 55, 61, 64
Start with main objectives	35, 61
Encourage patients to ask questions	18, 35, 55, 61, 64
Repeat key messages	35, 42, 54, 56
Use an adult tone but simple, direct diction	35, 38, 42, 54, 56, 61
Solicit questions effectively and consistently	38, 50
Limit the message to one to three main points	22, 38, 54, 59, 64
Create a shame free environment	42, 54, 59
Use short sentences	22, 55
Use familiar words	22
Use patient navigators or family members as support	18, 22, 50
Plan sufficient time for a consultation	22, 54, 55, 61
Allow patients to record the consultation	22
Sit face to face, do not underestimate the power of eye contact	55, 61
Stick to one topic at the time	55, 61
Frequently summarize	18, 55, 59
Use education materials	18, 22, 54–56, 59, 61, 64
Ask open end questions	61
Encouraging bringing a companion to the consultation	18

Table 4
Communication tips for written information.

Use plain and simple language	22, 35, 42, 59, 71, 73, 81, 85
Write in 5th grade level or below	35, 73, 81, 83, 85
Eliminate jargon, medical terminology and acronyms	20, 22, 59, 71, 73, 81, 85
Written materials should be limited to three main points with images that are relevant to the text	35, 59
Leave plenty of white space	20, 22, 35, 59, 71, 81
Keep sentences short and less complex sentence structure	20, 22, 37, 71
Use shorter words	20, 37, 85
Use font size of 12 or higher	22, 37, 59, 71, 81, 83
Use pictures, icons and/or diagrams	18, 20, 22, 37, 50, 71, 73, 81, 85
Use active voice	20, 22, 59, 71, 81, 85
Define any technical terms that must be included	20, 59, 71, 85
Break up paragraphs into shorter sections with clear subheadings	20, 22, 71, 81, 85
Use bullet points and numbers	20, 59, 71, 83
Use a serif font for the text and sans serif font for headings, avoid fancy script lettering.	59, 71, 81, 83
Straight the left margin and allow the right margin to be irregular	59, 71
Create an obvious path for the eye to follow	71, 73
Focus on desired behavior instead of medical facts	27, 59, 73
Make sure the information is culturally and linguistically appropriate	22, 59, 71, 73
Use good contrast between the print and background	59, 71, 81
Develop and test materials with the help of the target population	59, 85
Be consistent with word usage	85
Choose words with a single definition	85

three applications aimed to improve the health literacy of patients in general [89,95,97]. One of these tools also facilitated communication between the healthcare provider and patients and was included in this review because its primary goal was to enhance communication [90]. Four tools and strategies focused on applications for translating information [91–94]. One used the Google language tools for translating information between doctor and patient [92]. Another two served as a bedside interpreter for hospitalised patients [93,94], while the fourth described a tool to help healthcare professionals by providing predefined phrases, questions, instructions and images in different cultures [91].

3.5. Questionnaires

Nineteen studies regarding questionnaires were included in this scoping review [51,63,100–111], where all studies aimed to recognise health literacy. In total, six questionnaires employed to evaluate the general reading ability of patients with lower functional health literacy [63,100,102,103,107,109]. The Rapid Estimate of Adult Literacy in Medicine (REALM) is the most frequently mentioned questionnaire [63, 100,102,103,109]. REALM is a word recognition test that assesses reading level based on healthcare terms. In total, six questionnaires were employed to evaluate reading ability. The Wide Range Achievement Test 1993 (WRAT 3) evaluates reading, spelling and arithmetic[100]. The Korean Health Literacy Scale (KHLS) also assesses reading ability, numeracy skills, and the recognition of health-related words [103]. Additionally, the High Blood Pressure-Health literacy Scale has been introduced for assessing the ability to read and pronounce words related to hypertension and its treatment [103]. A fifth questionnaire, the short Mental Health Literacy Scale (s-MHLS), tests the ability to read, numeracy skills, and the use of health information [107]. Finally, the European Health Literacy Survey Questionnaire (HLS-EU) test reading ability in a healthcare context [109].

To evaluate reading ability in a healthcare context, the Test of Functional Health Literacy in Adults (TOFHLA) is another frequently mentioned questionnaire for recognising LHL [63,100,102,103,109]. It evaluates adult health literacy in a healthcare context. A shorter version of the TOFHLA was discussed by Gomes et al [103]. The Newest Vital Sign (NVS) questionnaire evaluates health literacy and the ability to understand and use healthcare information using nutrition labels [63, 102]. Other questionnaires, such as the Medical terminology Achieving Reading Test (MART), the Health Literacy Questionnaire (HLQ), and the 15-item Japanese Health Knowledge Test (J-HKT), were employed to assess knowledge about health and healthcare issues [100,106,110].

Four questionnaires assessed competency in communication and navigating healthcare issues [101,104,105]. The HLS19-COM-P measures communicative health literacy in interactions with physicians [101]. The Health Activities Literacy Scale (HALS) evaluates the ability to navigate healthcare issues [105]. Heijmans et al. described the Dutch Functional Communicative and Critical Health Literacy scale for assessing health literacy skills [104]. Finally, the TALKDOC questionnaire is an instrument to measure context-specific health literacy knowledge, dispositions of self-efficacy and prevention, and communication abilities [105].

Additionally, two questionnaires gauged health literacy through conversation rather than paper-based tests [51,102]. The Single Item Literacy Screening (SILS) quickly identifies patients having LHL by asking a question: “How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy?”[51,102]. The Conversational Health Literacy Assessment Tool (CHAT) assesses health literacy in the context of managing personal health, providing insight into the circumstances and the context [108].

3.6. Interpreters

Twenty-two studies involving in-person interpreters were included in this scoping review [52,71,112–131]. To identify if an interpreter was needed, Gray et al. described an information sheet [115] designed for healthcare professionals [132]. To ensure that doctors and patients were linguistically aligned throughout each stage of the medical visit and this interaction was free of any conflicting interpretations, the epistemic brokering method was used [52]. This epistemic brokering method refers to the process by which interpreters facilitate the exchange, translation, and integration of knowledge between doctors and patients to enhance understanding [52]. The other articles distinguished between three types of interpreters: professional, family, and ad hoc interpreters [71,112–130]. Professional interpreters were trained professionals who

specialised in translating spoken language accurately, using the precise words spoken by healthcare providers. In contrast, family and ad hoc interpreters lacked formal training in interpretation and may have included family members or persons temporarily brought in to assist with translation but not possessing the same level of linguistic expertise as professional interpreters.

3.7. Other media

Two studies involving other media are included in this scoping review [133,134]. Livingston et al. employed theatre as a means to convey information [133], while the Doctors Speak Up website was introduced as a resource for international doctors seeking information about healthcare culture and practices [134]. Differing from other health information sites, this website describes how to communicate information regarding various health topics in different cultures.

4. Discussion and conclusion

4.1. Discussion

This scoping review aims to provide physiotherapists with an overview of available strategies and tools to adapt the physiotherapeutic communication during the diagnostic phase in patients with LHL. As a result, six categories of strategies and tools in communication with patients with LHL have been highlighted here: verbal communication, written communication, digital devices, questionnaires, interpreters, and other media.

Previous reviews have described numerous communication tools dedicated to information provision [2,18,21]. A previous review that included studies published earlier than our years of inclusion described general written communication tips and, additionally, introduced two questionnaires, namely REALM and TOFHLA, to identify health literacy [18]. In a recent study by Murugesu et al., the research involved an initial exploration of communication challenges between healthcare professionals and patients having LHL such as verifying whether the patient understands information [2,3]. This study identified various communication strategies and tools to address these challenges, revealing a range of options primarily centred on decision-making and information provision [3]. Unlike the focus of this earlier study, our current approach adopted a broader search strategy. By applying this approach, we identified a broader range of strategies and tools available to physiotherapists. After conducting a thorough check, we incorporated all studies highlighted by Murugesu et al. A third study, specifically addressing oncology patients with LHL, found strategies and tools similar to those reported by Murugesu et al. However, it is noteworthy that the tools identified were not explicitly tailored to the context of oncology [3,21].

Collectively, all of the included studies along with our scoping review, underscore general communication strategies and the many communication tools dedicated to information provision, some of which are experimental and others well-established [2,3,18,21]. There remains a lack of strategies and tools for fostering a relationship with the patient, gathering information, decision-making, and responding to patient emotions. A possible explanation for the lack of strategies and tools addressing these communication aims is that the primary aim of communication has traditionally been centred around conveying information by persons or groups. In recent years, however, there has been a shift in healthcare, including within physiotherapy, where person-centred care has taken on an important role. Thus, it is important that appropriate communication tools are developed to align with the communication aims of fostering a relationship with the patient, gathering information, decision-making, and responding to patient emotions.

The strategies and tools included in the present review exhibit a broad applicability across diverse healthcare professionals and patients, revealing a shortage of tools customised for specific professions or diseases (see Supplementary Material file 3). While strategies and tools employed in various healthcare professions, like the Teach Back Method, have shared goals, there is also a need for profession-specific strategies and tools. Healthcare providers require strategies and tools tailored to the specific needs of their profession, particularly in the context of gathering information and engaging in shared decision-making [2]. Only two articles included strategies and tools tailored specially for physiotherapists [61,91]. The limited number of specialised tools for physiotherapists can be attributed to several potential factors. First, it may stem from the idea that communication techniques such as the Teach Back Method and the "Ask Me 3," along with general communication tips, can find applicability in the broader healthcare context. Another potential reason for the lack of specialised strategies and tools for physiotherapists may be attributed to the broader perception among physiotherapists that there is no necessity for such resources, as they may not recognise patients with LHL [20,135]. This awareness gap may have contributed to a lack of research into strategies and tools tailored specifically for this profession. Unknown factors might be enlightened by means of a study into barriers and facilitators of using tools and strategies by physiotherapists. In line with these findings, it is recommended to develop strategies and tools explicitly designed for physiotherapists, particularly focusing on enhancing shared decision-making, gathering information and building a relationship with the patient. Unlike other healthcare providers, physiotherapeutic diagnostic process is a dynamic iterative process that relies heavily on patient interaction in one or even multiple sessions. This patient-centred approach requires tailored communication tools and strategies that support patient engagement, adherence, and person centred care [28].

In this scoping review, only questionnaires designed for recognising LHL were identified. Pronunciation and numeracy skills emerged as the most frequently assessed domains in these questionnaires [51,63,100–110]. Research by Nguyen et al. highlighted a shortage of questionnaires from a clinical perspective and observed a distinction between subjective and objective assessment tools [135]. Objective questionnaires such as SILS demonstrated a superior utility for a clinical approach, whereas subjective questionnaires like REALM proved more effective for research-oriented goals. A few questionnaires were tailored for a specific profession or population, such as patients with high blood pressure. Even after our extensive search string, that included the word physiotherapist and synonyms, the results of this review did not reveal questionnaires, tailored specifically for physiotherapists.

4.1.1. Strengths and limitations

A notable strength of this scoping review is the stated objective of mapping out a broad overview of the strategies available for communication with patients with LHL. We intentionally did not include studies based on the quality of research. Another limitation is that we did not evaluate the effectiveness of the described strategies and tools, and the reliability of the questionnaires included. However, our approach in this scoping review ensured inclusivity and identified potential areas for further research and development in supporting effective communication during the first consultation with patients, such as strategies and tools for gathering information.

Exclusion of studies before the year 2000 may have introduced a limitation. Nevertheless, the unlikelihood of this limitation is underscored by the inclusion of one literature review conducted by Williams et al. spanning the period from 1966 to 2001, which informed this scoping review and led to the incorporation of strategies and tools reported therein [18].

Another limitation associated with the qualitative analysis lay in its reliance on an interpretive approach adopted by the reviewers during data analysis. Subsequently, efforts were made to enhance objectivity: a second researcher checked the data extraction process, and the search was conducted jointly by an information science specialist and a researcher with expertise in LHL. Additionally, input from other experts

in health literacy was sought to ensure a comprehensive coverage of strategies and tools. Another weakness of this review is that our search for grey literature was confined to databases, precluding a comprehensive exploration of guidelines and protocols. Despite these measures that we adopted, as with all reviews, it remains plausible that certain strategies and tools may have eluded inclusion.

4.2. Conclusion

In conclusion, this scoping review generated an overview of generic strategies and tools that are currently available to support communication between healthcare providers and their patients with LHL during the diagnostic process. Only two specific physiotherapeutic communication tools were identified. Physiotherapists will now be able to identify communication aims that are perceived as difficult and have an overview of a variety of tools and materials to improve communication with their patients. However, it is important to acknowledge certain limitations of this review. We did not assess the effectiveness of the identified strategies and tools, nor did we evaluate the reliability of the included questionnaires. Additionally, our search for grey literature was limited to databases, potentially overlooking relevant guidelines and protocols. Furthermore, our qualitative analysis was based on an interpretive approach, though efforts were made to enhance objectivity through expert consultation and a rigorous review process.

4.3. Practice implications

In light of the findings of this scoping review, it is evident that there is a need for the development of communication strategies and tools tailored to the unique physiotherapeutic process. To address this gap, we recommend the implementation of design-based research, offering a practical approach that involves collaboration between patients and physiotherapists. This flexible approach allows the researchers to use a mixed method approach including both qualitative and quantitative research methods. Additionally, there is a need for further research into the efficacy of the strategies and tools for physiotherapists, and the validity and reliability of questionnaires, that are tailored for persons with and without LHL. Despite identifying general communication strategies, significant knowledge gaps remain. Specifically, there is a lack of physiotherapy-specific research in how general communication strategies and tools are implemented in practice, as well as limited evidence on their effectiveness. Given the challenges in identifying patients having LHL and the absence of specific tools for identifying, we suggest employing the general communication strategies and tools outlined in this study for all persons, regardless of their health literacy level. To pinpoint the strategies and tools needed, we suggest that physiotherapists consult our Supplementary Material file-3 to find a suitable tool or strategy for communication. Furthermore, the results of this scoping review emphasise that physiotherapy curricula and professional training must include effective communication strategies and tools to recognise patients with LHL. It is essential to raise awareness and ensure alignment with current healthcare guidelines and policy recommendations concerning patients with LHL. In addition, addressing the cost-effectiveness of such strategies may support their practical adoption and long-term sustainability in clinical practice.

CRediT authorship contribution statement

Bruin Nicole: Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Wittink Harriet:** Writing – review & editing. **Oosterhaven Janke:** Writing – review & editing, Methodology, Conceptualization. **Hesselink Arlette:** Writing – review & editing. **Hobbelen Hans:** Writing – review & editing, Supervision. **Lakke Sandra:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Data curation, Conceptualization.

Funding

This work was supported by SIA RAAK, RAAK.MKB13.014.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

The authors like to thank Annemarie van der Velden, information specialist Utrecht University of Applied Sciences, for her help with the search strategy.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.pec.2025.108784.

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