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# Prevalence of coverage of assistive technology in the WHO European Region

a scoping review



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## Abstract

This publication aims to provide an overview of what is currently known about the prevalence and coverage of assistive technology in the WHO European Region. It is guided by the following research question: "What is the prevalence of needs, access and coverage of assistive technology and what are facilitators and barriers to access and coverage in the WHO European Region?". Sixty-two publications included in this review were identified by searching the academic databases Scopus, CINAHL, MEDLINE, PsycINFO and Google Scholar. A further 41 publications were identified by national experts (total 103 publications). Relevant information was extracted into a data chart and analysed, using a narrative approach. The publication identified several barriers to accessing assistive technology in the Region, including barriers related to the physical accessibility of assistive technology, financial affordability and acceptability of assistive technology by users. All stakeholders (policy-makers, health care professionals, assistive technology providers, caregivers, etc) should work together to address these barriers and improve people's access to assistive technology in the Region.

## Keywords

Prevalence of coverage of assistive technology in the WHO European Region: a scoping review

1. Assistive Technology. 2. Assistive Products. 3. Rehabilitation. 4. Assistive technology - accessibility, affordability and acceptability. 5. Assistive technology - prevalence of needs, access and coverage. 6. Person with disabilities – assistive products. 7. Universal health coverage. I. World Health Organization.

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# Abbreviations

AAC	alternative and augmentative communication
ALS	amyotrophic lateral sclerosis
GATE	WHO Global Cooperation on Assistive Technology
USAID	United States Agency for International Development
UNICEF	United Nations Children's Fund



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# Executive summary

As of 2021, more than one billion people globally need assistive technology – a number that is set to double by 2050. Assistive technology can enable people living with restrictions in their day-to-day lives because of disability, noncommunicable diseases or ageing to be more independent. Broadly speaking, assistive technology can help to alleviate limitations related to the following six functional categories: hearing, vision, mobility, self-care, communication and cognition. In addition to convincing evidence of its cost-effectiveness, assistive technology has the potential to help people living with restrictions due to ageing, disease or disability escape marginalization and become empowered to live the life they want to lead and improve their own quality of life and that of the people around them. Despite these benefits, it is estimated that only 10% of people needing assistive technology currently have access to it, even basic devices such as hearing aids or spectacles.

This scoping review aims to provide an overview of what is currently known about the prevalence and coverage of assistive technology in the WHO European Region. It is guided by the following research question: “What is the prevalence of needs, access and coverage of assistive technology and what are facilitators and barriers to access and coverage in the WHO European Region?”. Sixty-two publications included in this review were identified by searching the academic databases Scopus, CINAHL, MEDLINE, PsycINFO and Google Scholar. A further 41 publications were identified by national experts within the WHO European Region. The total number of publications included in the analysis was 103. Relevant information was extracted into a data chart and analysed, using a narrative approach.

Evidence regarding the prevalence of needs, access and coverage of assistive technology came from a few countries only, with the number of publications varying between functional categories: 14 for hearing, 12 each for vision and mobility, 11 for communication, six for self-care and two for cognition. Twenty-eight publications included data from national surveys or from nationally representative samples. In these publications, the prevalence of needs for assistive technology varied considerably, within as well as across the functional categories. The prevalence of met and unmet needs also varied between functional categories, with some domains showing a higher prevalence of met needs, such as hearing and vision, while others reported higher levels of unmet needs, such as communication. Overall, caution should be taken when interpreting results related to the prevalence of needs, access and coverage, as data came from a limited number of publications.

Another aim of this review was to identify and understand facilitators and barriers to accessing assistive technology. More evidence is available on barriers and facilitators to assistive technology accessibility, affordability and acceptability, compared with evidence on the prevalence of needs, access and coverage of assistive technology. Most of the identified barriers appear common to many countries in the WHO European Region from which data were available. One of the main barriers for accessing assistive technology was related to physical accessibility. For example, in many reviewed publications, the process of applying for assistive technology was described as complicated, bureaucratic and time-consuming. The assistive technology provision system was also seen as fragmented and lacking in coordination





between various delivery mechanisms. Limited knowledge and training of health care professionals, limited information available to potential end users about assistive products, limited funding for assistive technology and the fluctuation in national prescription standards were other barriers that influenced the physical accessibility of assistive technology. In addition, financial affordability and having to pay out of pocket to access and use assistive technology were identified as substantial barriers by many people in the reviewed documents. Some people with assistive technology needs were also afraid of stigmatization from using assistive technology, especially where the use of assistive technology draws attention to otherwise invisible limitations. Generally, the identified barriers and facilitators are mostly in accordance with what other researchers have found, both within and outside the European Region. Nonetheless, they must still be considered in the political, societal and economic context of each country.

To conclude, this report provided an evidence synthesis on the prevalence of needs, access and coverage of assistive technology and barriers and facilitators to accessing it. Overall, based on the evidence reviewed, there is a need to provide more data on the prevalence of need, access and coverage of assistive technology in each of the 53 Member States of the WHO European Region (plus Kosovo<sup>1</sup>) and for each functional category. Ideally, this information should be collected in accordance with generally agreed standards regarding the frequency of data collection and reporting, sampling strategies, definitions of functional limitations and the assistive products and age groups to be included. The report also identified several barriers to accessing assistive technology in the Region, including barriers related to the physical accessibility of assistive technology, financial affordability and acceptability of assistive technology by users. All stakeholders, such as policy-makers, health care professionals, assistive technology providers and caregivers, should work together to address these barriers and improve people's access to assistive technology in the Region.

1 All references to Kosovo in this document should be understood to be in the context of the United Nations Security Council resolution 1244 (1999).



# 1 Introduction

## 1.1 Background

Assistive technology enables people to live independent, productive and healthy lives (1).<sup>2</sup> Assistive products are devices for individuals with impaired hearing, vision, mobility, self-care or communication capabilities or cognition and include wheelchairs, walkers, prostheses, spectacles, hearing aids, etc. Assistive products offer crucial benefits for the everyday life of many individuals, as they allow for greater participation in social activities, work and school. Without assistive products, these individuals are at risk of being socially excluded, of falling into poverty or of depending on their family and society to a greater extent. Therefore, the positive impact of assistive technology goes beyond individual benefits by enabling access to education, a more productive workforce and decreasing the need for hospitalization, leading to reduced health and welfare costs for the country (1, 2). Consequently, access to assistive products is not only a human right protected under the Convention on the Rights of Persons with Disabilities (3), but also a worthwhile long-term investment.

WHO estimates that over one billion people need one or more assistive products (4), yet over 900 million people (90% of those in need) do not have access to the assistive products they need (5). Most of these individuals are people with disabilities, people with noncommunicable

diseases and older adults. As people age, including individuals with disabilities, function declines in multiple areas such as mobility, vision and hearing and thus the need for assistive products increases (6, 7). As the global population ages and, subsequently, the prevalence of noncommunicable diseases increases, the number of people needing assistive products is projected to increase beyond 2 billion by 2050 (1).

## 1.2 Relevance for WHO

The WHO Global Cooperation on Assistive Technology (GATE) initiative, launched in July 2014, aims to improve access to high-quality and affordable assistive products globally. The GATE initiative focuses on five interlinked areas: people, policy, products, provision and personnel (5P) (2).

In May 2018, the Seventy-first World Health Assembly adopted a resolution urging Member States to develop, implement and strengthen policies and programmes to improve access to assistive technology. The Health Assembly requested the WHO Director-General to prepare a global report on effective access to assistive technology (8), which is planned for release in 2022.

The WHO Regional Office for Europe has several activities aiming to support Member States in strengthening access

<sup>2</sup> Numbers in italics and in brackets refer to publications listed in the reference list. Numbers in Roman type and in brackets (section 3 onwards) refer to the ID number of a publication listed in Annex 4.



to assistive technology, two of which relate directly to building the knowledge base:

1. an initiative to support Member States in measuring access to assistive technology through national representative household surveys was launched in 2020; the WHO rapid Assistive Technology Assessment (rATA) questionnaire, an interviewer-administered questionnaire, is used for data collection on access to assistive technology; and

2. an assistive technology system analysis describing current service provision is being conducted in selected Member States.

This scoping review complements the knowledge base regarding access to assistive technology in the European Region. The overall goal is to gather the evidence required to inform and support development of assistive technology services and policies in the WHO European Region.



## 2 Methods

A scoping review was used to conduct the evidence synthesis. A scoping review is a type of review that allows an exploratory yet systematic approach to synthesizing and summarizing evidence from diverse source material with the aim to inform policy, practice and future research (9, 10). This design allows the synthesis of evidence from both academic and grey literature. The literature search in scoping reviews is an iterative process that allows the search strategy to be refined as a deeper understanding of key concepts and the literature under investigation is gained (9, 11). The design of the scoping review was based on the Arksey and O'Malley framework for conducting scoping reviews (9, 11). The framework recommends six steps to conducting a scoping review. These are:

1. identifying the research question
2. identifying relevant publications
3. selecting the publications
4. charting the data
5. organizing, summarizing and reporting the findings and
6. stakeholder consultation (optional).

### 2.1 Research question

The overall aim of this review is to contribute to understanding the current provision of assistive technology

services in the WHO European Region. Specifically, the review aims to draw a picture of the coverage of assistive technology in countries in the Region by understanding the prevalence of needs for and access to assistive technology. Also, to gain a good understanding of assistive technology coverage in the Region, it is important to identify and understand facilitators and barriers to accessing assistive technology by people who need them. Therefore, this review aims to answer the following research question: "What is the prevalence of needs, access and coverage of assistive technology and what are facilitators and barriers to access and coverage in the WHO European Region?".

### 2.2 Identifying relevant publications

This step describes the search strategy that was followed to identify relevant publications, including the search terms and the resources that were used.

#### 2.2.1 Academic databases

At the start of the review, a scoping search was conducted to gain familiarity with the volume of the literature and refine the search terms and eligibility criteria. The scoping search was conducted on one general database (Scopus) and one subject-specific database (MEDLINE). The search terms used for the scoping search were informed by the review's research question and the key concepts addressed. For each concept, a list of key and alternative search terms was developed. The Medical Subject Headings (MeSH) database was also searched to identify



subject headings for each key concept. The key concepts addressed in this review are:

1. assistive technology;
2. assistive technology functional category (12)
  - hearing
  - vision
  - mobility
  - self-care
  - communication and
  - cognition.
3. fifty-three countries (plus Kosovo<sup>3</sup>) in the WHO European Region (13);
4. access and coverage; and
5. barriers and facilitators.

For the assistive technology concept, a list of search terms for assistive products were added to the search strategy to gain a better understanding of the coverage of assistive technology and barriers and facilitators to access. These search terms were identified initially from the scoping search. The WHO Priority Assistive Products List (14) (see Annex 1), a list of 50 priority assistive products selected on the basis of widespread need and impact on a person's life, was then used to add search terms that did not appear in the scoping search. The search terms that appeared in the scoping search were hearing aids, correction of hearing impairment, communication aids for disabled, sensory aids, audiovisual aids, canes and

wheelchairs. The remaining assistive product-related search terms were identified from the WHO Priority Assistive Products List. The final search terms were first piloted on the two databases used for the scoping search (MEDLINE and Scopus) and then adapted to the remaining databases (see Table 1). Screening the first 200 results from the ERIC database (education research) revealed no relevant publications, and it was accordingly decided not to use ERIC in the search. Annex 1 presents the search string as it was used in Scopus, as an example. For the other databases, this search string was slightly adjusted to suit their requirements.

### Table 1 Academic databases used in the scoping search

Database	Focus of indexed research
Scopus	Multidisciplinary
MEDLINE via OVID	Life sciences and biomedicine
CINAHL via EBSCO	Nursing and allied health professions
Google Scholar	Multidisciplinary
PsycINFO	Psychology

### 2.2.2 Consultation with national experts

Evidence answering the research question was likely to be published not only in peer-reviewed academic papers, but also in other sources. Such sources, generally referred to as “grey literature”, are likely to include government reports, reports from other national, independent and international organizations, information from insurance providers and information from key websites (15). A list of national experts in the WHO European Region was compiled to assist in the identification of country-specific publications, from both academic and grey sources, and

3 All references to Kosovo in this document should be understood to be in the context of the United Nations Security Council resolution 1244 (1999).



in the translation of key aspects of any such publications that were not published in English. Experts were identified from the list of members on the website of the Association for the Advancement of Assistive Technology (AAATE), the professional network of the research team, Google searches and snowballing. An invitation email was sent to these national experts (see Annex 2 for the email template). The email included a checklist (see Annex 3) that experts were asked to use to identify any relevant publications from their country, either academic or grey literature, and relevant information from those publications. At least one follow-up email was sent to non-responders.

## 2.3 Selecting the publications

Publications from academic databases were selected in two steps: (1) title and abstract screening; and (2) full

document screening. Publications were selected using inclusion and exclusion criteria developed from the Population, Concept and Context (PCC) framework (16). The two main authors (AS and SA) both independently screened a random sample of 600 publications. Throughout this process, the eligibility criteria were iteratively refined through discussion between the two authors. Cohen's kappa coefficient was calculated for this sample to indicate inter-rater reliability (17, 18). As the kappa coefficient showed moderate agreement (0.518), the screening of the remaining publications was divided between AS and SA. Any uncertainty was again resolved through discussion. Table 2 presents the final inclusion and exclusion criteria.

**Table 2 Inclusion and exclusion criteria**

Key concepts		Inclusion criteria	Exclusion criteria
<b>Population</b>		People with a need for assistive technology: mostly people with disabilities or noncommunicable diseases and older adults. The search is not limited to specific subgroups	People with no need for assistive technology
<b>Concept</b>	<b>Assistive technology/product</b>	Assistive technology that can be sorted into the following functional categories: <ul style="list-style-type: none"> <li>• hearing</li> <li>• vision</li> <li>• mobility</li> <li>• self-care</li> <li>• communication</li> <li>• cognition</li> </ul>	Assistive technology belonging to any other group Any service, treatment or therapy not related to assistive technology Technology used to diagnose disease, disability or care needs Assistive technology is owned by and only accessible in a specific setting (e.g. therapy, work or school) as this provides no or only limited understanding of effective coverage Assistive technology which is surgically implanted and remains permanently in the body

(continued)



Table 2 (Continued)

Key concepts		Inclusion criteria	Exclusion criteria
	<b>Prevalence of needs</b>	Percentage of the population that has a need for assistive technology: mostly people with disabilities or noncommunicable diseases and older adults	
<b>Concept</b>	<b>Access and coverage of assistive technology *</b>	<p>Percentage of the population that needs assistive technology and owns/uses assistive products (met needs)</p> <p>Percentage of the population that needs assistive technology but does not own assistive products because of identified barriers (unmet needs)</p>	<p>Percentage of the population that theoretically has access to assistive technology from a policy perspective, without an understanding of the effective coverage</p> <p>Focuses exclusively on the development of assistive technology or on people's attitudes towards a specific assistive technology and does not address attitudes towards accessing assistive technology</p>
	<b>Facilitators and barriers to access and coverage</b>	<p>These may fall into these three categories:**</p> <ul style="list-style-type: none"> <li>• physical accessibility</li> <li>• financial affordability</li> <li>• acceptability</li> </ul> <p>However, publications that mention other barriers or facilitators are still included</p>	No facilitators or barriers are excluded
<b>Context</b>	<b>WHO European Region</b>	Countries that are part of the WHO European Region (13) (plus Kosovo***)	Countries not part of the WHO European Region
	<b>Language</b>	Publications which can be read by the research team (English and German); authors of publications in any other language will be sent the checklist (Annex 2) and asked to complete it based on their publication	Publications in a language not spoken by the team and where authors are not available to complete a checklist
	<b>Time range</b>	Any evidence published since 2010	Any evidence published before 2010
	<b>Abstract</b>	Publications with an accessible abstract	Publications without an accessible abstract

\*In the context of this evidence synthesis, the definitions of access and coverage were adopted from a previous publication (19).

**\*\*Physical accessibility:** availability of good health services within reasonable reach of those who need them and with opening hours, appointment systems and other aspects of service organization and delivery that allow people to obtain the services when they need them.

\*\*\*All references to Kosovo in this document should be understood to be in the context of the United Nations Security Council resolution 1244 (1999).

**Financial affordability:** people's ability to pay for services without financial hardship. It considers not only the price of the health services but also indirect and opportunity costs (e.g. the costs of transportation to and from facilities and of taking time away from work). Affordability is influenced by the wider health financing system and by household income.

**Acceptability:** people's willingness to seek services. Acceptability is low when patients perceive services to be ineffective or unsuitable, or when social and cultural factors such as language, age, sex, ethnicity or religion of the health provider discourage people from seeking services (20).



## 2.4 Charting the data

A data charting form was used to extract data from publications included in the analysis. The data chart form included items relating to the general description of the source: year of publication, authors/authoring organization, type of publication, study design, sample size, age group(s) included and language. It also included items relating to the research question: functional category and/or assistive products discussed in the paper; prevalence of need; access to and coverage of assistive technology; and barriers to and facilitators for access and coverage of assistive technology. The data chart was also used to develop the checklist (Annex 3) that was sent to national experts to guide them in identifying relevant data sources and the information they contained. The completed checklists received from the national experts were entered into the data chart.

## 2.5 Organizing, summarizing and reporting the findings

Two strategies were used to analyse and summarize the charted data presented in sections 3.3 and 3.4 below. First, the data chart itself was used to summarize the main characteristics of the included publications (see section 3.2 and Annex 4). A narrative summary was then created to provide an overview of the main findings related to prevalence of needs and access and coverage of assistive technology. These findings were structured to match the six functional domains (hearing, vision, mobility, self-care, communication and cognition) and are presented together with a table which gives an overview of the countries in which data were collected, the sample size and any specific assistive products mentioned (see section 3.3). The findings related to facilitators and barriers to access and coverage are structured and presented in three categories: physical accessibility, financial affordability and acceptability (see section 3.4).





# 3 Results

## 3.1 Summary of the literature search

The search of the five databases yielded a total of 7656 publications. After removing duplicates, a total of 7115 publications were screened for eligibility. The screening of titles and abstracts of these publications yielded 407 publications that were eligible for full-text screening. Sixty-two publications remained after the full-text screening and were included in the analysis.

A total of 245 national experts were contacted and asked to help identify relevant publications in their countries. Despite our efforts, we were not able to find any national experts in seven Member States of the WHO European

Region. We asked those experts whom we were able to identify and contact to complete one checklist (Annex 3) per relevant record. Of the 245 experts contacted, 76 replied (response rate: 29.27%) and shared a total of 114 completed checklists, of which we included 32 (see Table 3). We excluded checklists if they did not fit the scope of the review, were a duplicate, or were based on publications that were not publicly accessible at the time (e.g. unpublished research reports or presentations). A further 13 publications were included which had been suggested or forwarded to us by national experts but for which no checklists had been completed.

Table 3 Expert consultation: summary by country

Country	Experts contacted	Replies*	Contributors**	Checklists shared by the experts
1. Albania	3	2	2	2
2. Andorra	0	0	0	0
3. Armenia	2	1	2	2
4. Austria	13	3	3	2
5. Azerbaijan	2	1	2	5
6. Belarus	0	0	0	0
7. Belgium	9	0	0	0
8. Bosnia and Herzegovina	0	0	0	0
9. Bulgaria	2	1	1	0



Country	Experts contacted	Replies*	Contributors**	Checklists shared by the experts
10. Croatia	2	2	2	2
11. Cyprus	3	2	3	9
12. Czechia	1	0	0	0
13. Denmark	4	0	0	0
14. Estonia	1	1	1	3
15. Finland	13	2	2	15
16. France	8	2	1	1
17. Georgia	2	1	1	0
18. Germany	8	0	0	0
19. Greece	6	2	2	0
20. Hungary	4	0	0	0
21. Iceland	10	4	6	6
22. Ireland	12	4	4	4
23. Israel	3	0	0	0
24. Italy	26	7	6	8
25. Kazakhstan	1	1	1	0
26. Kosovo***	0	1	1	0
27. Kyrgyzstan	2	1	1	0
28. Latvia	1	1	1	5
29. Lithuania	2	1	1	0
30. Luxembourg	2	0	0	0
31. Malta	2	2	4	3
32. Monaco	0	0	0	0
33. Montenegro	1	0	0	0
34. Netherlands	8	1	2	8
35. North Macedonia	0	0	0	0
36. Norway	6	3	3	1
37. Poland	2	2	3	3
38. Portugal	8	2	2	19
39. Republic of Moldova	2	2	1	1

Country	Experts contacted	Replies*	Contributors**	Checklists shared by the experts
40. Romania	1	1	3	1
41. Russian Federation	1	0	0	0
42. San Marino	0	0	0	0
43. Serbia	2	1	1	0
44. Slovakia	4	3	3	1
45. Slovenia	1	0	0	0
46. Spain	7	0	0	0
47. Sweden	19	7	7	7
48. Switzerland	16	2	2	0
49. Tajikistan	2	2	2	0
50. Turkey	1	0	0	0
51. Turkmenistan	2	1	5	3
52. Ukraine	2	1	1	0
53. United Kingdom	16	4	2	0
54. Uzbekistan	4	2	2	3
Total	249	76	86	114

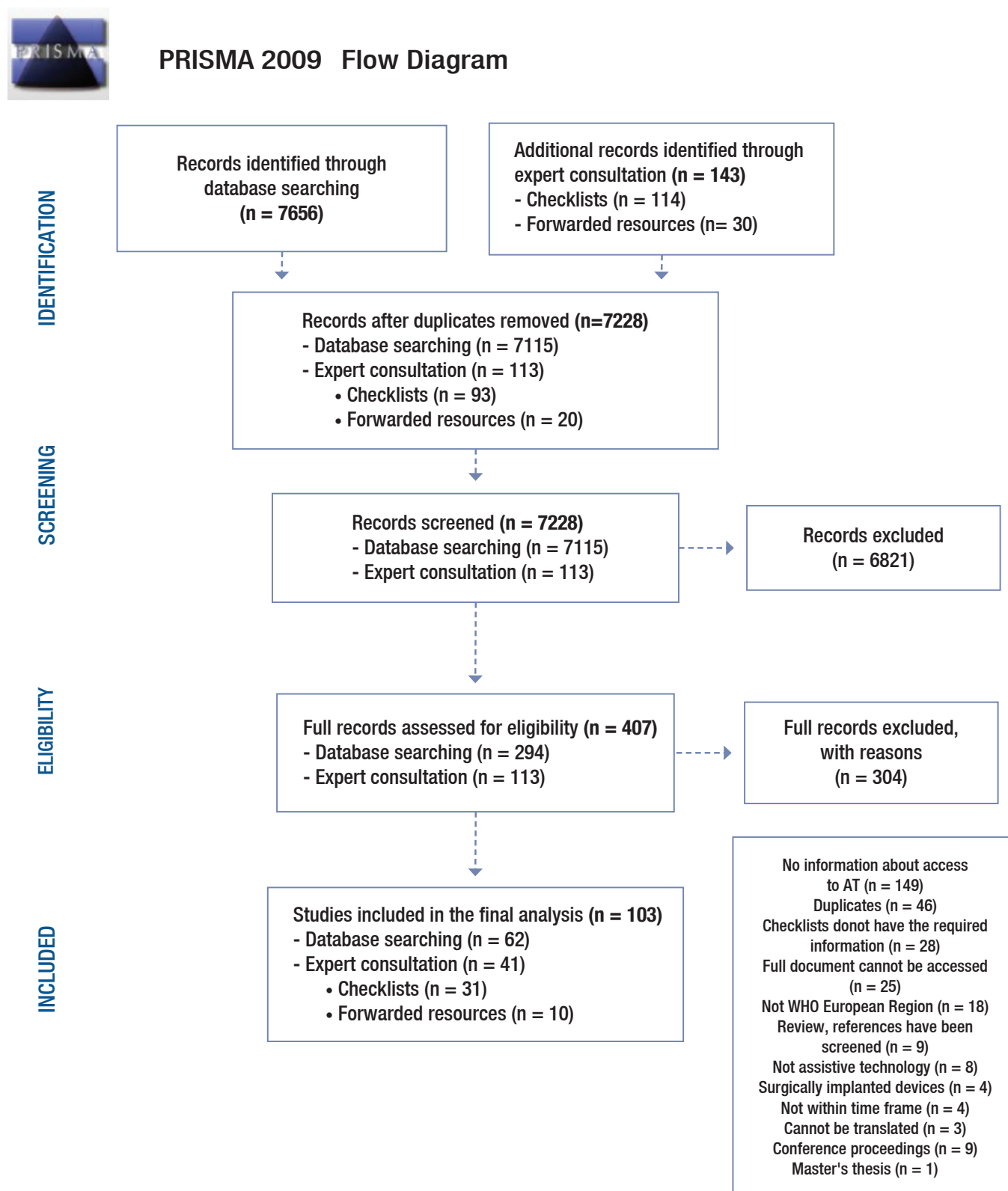
\* Replies included both positive responses (i.e. affirmations of intent to support the review) and negative responses (i.e. national experts declaring they would not be able to support the review).

\*\* There are more contributors than initial replies, as some national experts collaborated on the checklists with colleagues.

\*\*\* All references to Kosovo in this document should be understood to be in the context of the United Nations Security Council resolution 1244 (1999).

The total number of publications included in the analysis was 103: namely, 62 identified from the academic database search and 41 from the national expert consultations. Publications identified by both the database search and expert consultations were classified under the database search and excluded as duplicates from the expert consultation, as the former was completed before the latter. Fig. 1 presents a PRISMA diagram of the number of publications

identified and screened for eligibility. The PRISMA diagram is generally used in systematic reviews and meta-analyses to illustrate the number of publications considered in each phase of the review, as well as the reasons for exclusions (21). Although we acknowledge that our review is not a systematic review or meta-analysis, PRISMA is nonetheless an effective tool to illustrate this process.

**Figure 1** PRISMA diagram summarizing the number of publications screened for eligibility

Source: Moher D, Liberati A, Tetzlaff J, Altman DG, on behalf of the PRISMA Group. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: the PRISMA Statement. PLoS Med. 2009;6(7):e1000097. doi:10.1371/journal.pmed1000097.

For more information, visit [www.prisma-statement.org](http://www.prisma-statement.org).

AT: assistive technology.



### 3.2 Characteristics of included publications

A summary of the number of publications identified for each country in the WHO European Region can be found in Table 4. Of the 103 publications, the countries that were most represented (i.e. which were the focus of data collection or discussion) were the United Kingdom

( $n = 30$ ), followed by Sweden ( $n = 7$ ), Ireland ( $n = 6$ ), the Netherlands ( $n = 5$ ), Germany ( $n = 4$ ) and Cyprus ( $n = 4$ ). Nine publications were multi-site. No publications were identified for 18 countries (see greyed-out rows in Table 4). The sample size of publications, as far as available, ranged from  $n = 499\ 365$  (24)<sup>4</sup> to  $n = 5$  (87), with 48 of the publications, around half of all those included, having a sample of fewer than  $n = 200$

**Table 4** Number of publications identified for each country

Country	Total	Single country publication*	Multicountry publication*	Functional domains** mentioned
Albania	1	75		M
Andorra	0	–	–	–
Armenia	4	4, 47	3, 5	H, V, M, SC
Austria	2	99	36	H, V, M, CM, CG
Azerbaijan	4	12, 13, 65	5	H, V, M, SC, CM
Belarus	0	–	–	–
Belgium	0	–	–	–
Bosnia and Herzegovina	0	–	–	–
Bulgaria	1		36	H, V, M, CM, CG
Croatia	3	20	30, 36	H, V, M, CM, CG
Cyprus	4	62, 63, 64, 86		M
Czechia	0	–	–	–
Denmark	4		3, 15, 36, 58	H, V, M, CM, CG
Estonia	1	94		M, SC
Finland	2	97	36	All
France	5	1, 53	9, 31, 36	All
Georgia	1		5	n/a
Germany	8	11, 40, 41, 49	9, 15, 36, 79	H, V, M, CM, CG

4 Numbers in Roman type and in brackets refer to the ID number of the publication, listed in Annex 4. Numbers in italics and in brackets refer to publications listed in the reference list.



Country	Total	Single country publication*	Multicountry publication*	Functional domains** mentioned
Greece	1		36	H, V, M, CM, CG
Hungary	2	68	36	All
Iceland	0	–	–	–
Ireland	6	10, 21, 22, 34, 44, 48		All
Israel	0	–	–	–
Italy	4	17, 84	36, 79	All
Kazakhstan	1		5, 6	n/a
Kyrgyzstan	1		5, 6	n/a
Latvia	1		36	H, V, M, CM, CG
Lithuania	0	–	–	–
Luxembourg	0	–	–	–
Malta	0	–	–	–
Monaco	0	–	–	–
Montenegro	1		30	CM
Netherlands	7	18, 73, 81, 83, 103	36, 79	All
North Macedonia	0	–	–	–
Norway	4	82, 87	36, 79	H, V, M, CM, CG
Poland	2	39	36	H, V, M, CM, CG
Portugal	3	27, 28, 43		All
Republic of Moldova	1	32		M
Romania	2	72	36	H, V, M, CM, CG
Russian Federation	2	46	15	All
San Marino	0	–	–	–
Serbia	2	59	30	CM
Slovakia	0	–	–	–
Slovenia	1	78		n/a
Spain	3	26	3, 36	All

Country	Total	Single country publication*	Multicountry publication*	Functional domains** mentioned
Sweden	9	2, 52, 61, 76, 77, 93, 98	31, 36	All
Switzerland	3	38, 50	31	M
Tajikistan	5	45, 69, 70, 102	5, 6	M
Turkey	1	57		H
Turkmenistan	2	80	5, 6	H, M, CM
Ukraine	1		3	
United Kingdom	34	7, 8, 14, 16, 19, 23, 24, 25, 29, 33, 35, 37, 42, 51, 55, 56, 60, 66, 67, 71, 74, 85, 88, 89, 90, 91, 92, 95, 96, 101	9, 36, 58, 79	All
Uzbekistan	3	54, 100	5, 6	n/a

participants. Information on sample size was not available for 33 publications; 28 publications included data from national surveys or from nationally representative samples.

The following sections present detailed information, first on the prevalence of needs and coverage of assistive technology and then on barriers and facilitators to assistive technology coverage, as presented by the publications included. Some publications g information on both issues, while others only provided details on one or the other.

### 3.3 Prevalence of needs and coverage of assistive technology

In this section, we present information on the prevalence of needs for assistive technology, i.e. how many people or what percentage of a population require assistive

technology, as well as the coverage of assistive technology, i.e. how many people or what percentage of a population who need assistive technology have, or do not have, access to or use it. As far as available, the information is presented according to each country and each of the functional domains: hearing, vision, mobility, self-care, communication and cognition. Some publications address more than one functional domain and are thus mentioned more than once. The country the evidence is based on is included to provide an overview of where the main gaps are for each country.

### 3.3.1 Hearing

Fourteen publications (13.59%) included information about needs related to hearing difficulties. One publication was from France (1), one from Ireland (22), three from

Sweden (52, 77, 98), one from Tajikistan (70), three from the United Kingdom (7, 23, 90) and one from Uzbekistan (100). The remaining publications were from multiple countries (3, 9, 15, 31). Sample sizes ranged from  $n = 184$  (1) to  $n = 132\,028$  participants (9). Six publications focused on older people (1, 7, 23, 31, 77, 90), three on adults (50, 52, 98) and two on all age groups (9, 100). The remaining publications were not clear about the age groups included. Seven publications were either nationwide surveys or included data from nationally representative samples (1, 3, 7, 9, 31, 90, 98).

The prevalence of people with hearing difficulties ranged from 10.5% (100) to 60.8% (52) across all publications and from 10.6% (9) to 42% (31) in the nationally representative samples. For those aged 65 years and older, the prevalence of hearing difficulties ranged from 30% (3) to 42% (31). Hearing aids were the assistive products mostly discussed, with only two publications (22, 100) explicitly mentioning others. The prevalence of met needs for hearing aids ranged from 1.2% (100) to 87% (98) across all publications, including the nationally representative ones. It is noteworthy that the publication reporting the highest prevalence of hearing aid use, 87%

(98), focused exclusively on severe to profound hearing difficulties. Only one publication reported the prevalence of unmet needs for hearing aids, which was 14.9% (23).

There are three main challenges to the interpretation of the 14 publications. First, authors used different methods for defining the need for assistive technology (e.g. some used a self-reported or measured prevalence of hearing difficulties; publications used different levels of severity of hearing difficulty for inclusion; some publications measured counted consultations with health care professionals about hearing difficulties). Second, samples differed widely, with different age groups included, sampling strategies used and sample sizes with only few aiming to gather population-level prevalence data of hearing difficulties. Third, regarding the reporting of the percentage of hearing aid users, some reported those who acquired hearing aids after referral, some those who owned them and some those who used them regularly. Ideally, all this information should be collected to obtain a better picture of the people who own and who use hearing aids. Table 5 presents a summary of the information on prevalence and coverage of assistive technology as it pertains to the functional domain of hearing.





**Table 5 Summary of information on prevalence of needs and coverage of assistive technology: hearing**

Country	ID	Assistive products	Sample	Prevalence of need	Percentage who own/use assistive technology	% who do not own assistive technology
France	1	Hearing aids	n = 184	6 million older people with hearing difficulties	20% use hearing aids; 60% of those prescribed acquired hearing aids	n/a
Ireland	22	Various	n = 14 518	57 600 people with hearing impairment	n/a	Amplifiers (e.g. FM system, acoustic, infrared) 36.2%, hearing aids without T-switch 45.2%, with T-switch 47.4%, fax machine 40.7%, speedtext 37.4%, visual or vibrating alerts or alarms (e.g. doorbell) 57.2%, phone related devices (e.g. "coupler", flashers, minicom) 56.3%, induction loop system 54.8%, computer to communicate e.g. email or chat services 36.4%, subtitles on TV 23.2%, mobile phone for texting 15.0%
Sweden	52	Hearing aids	n = 224	60.8% had sought help at a hearing clinic at study follow-up	25.4% had hearing aids	n/a
	77	Hearing aids	n = 346	55% had hearing difficulties	59% of those with hearing difficulties had hearing aids	n/a
	98	Hearing aids	n = 4286	27.5% had hearing difficulties due to disease; 18.5% due to noise damage or trauma; 51.5% due to unknown reasons	87% had hearing aids	n/a
Tajikistan	70	n/a	n = 200	12% had at least some hearing difficulties	n/a	n/a
United Kingdom	7	Hearing aids	n = 8780	39.1% had hearing difficulties	<20% with hearing difficulties used hearing aids	n/a



Country	ID	Assistive products	Sample	Prevalence of need	Percentage who own/use assistive technology	% who do not own assistive technology
United Kingdom	23	Hearing aids	n = 1000	13% had consultation about hearing difficulties last year	14% of participants used hearing aids, 80% of those fitted with hearing aids used them, 3% had tried but did not wear them	n/a
	90	Hearing aids	n = 9666	25.7% (n = 2845) with probable hearing problems, 13.9% (n = 396) of which self-reported hearing difficulties	28% used hearing aids regularly	n/a
Uzbekistan	100	Various	n/a	All: 10.5% adults: 9.4%; children 15.6% of people (from their total number)	Hearing aids: 1.2% Phone modifications (hearing aid adapted, audiovisual caller signals, etc.): 0.3% TV with subtitles: 0.2% Amplifier (acoustic, infrared): 0.2% Visual or vibrating alarm system for doorbell or fire alarms: 0.4% Prosthetic ear or other device to hear better: 0.4% Any sound amplifier (e.g. megaphone): 0.1%	Hearing aids: 7.2% Phone modifications (hearing aid adapted, audiovisual caller signals, etc.): 3.4% TV with subtitles: 2.9% Amplifier (acoustic, infrared): 2.9% Visual or vibrating alarm system for doorbell or fire alarms: 2.6% Prosthetic ear or other device to hear better: 4.0% Any sound amplifier (e.g. megaphone): 2.9%
Multicountry	3	Various	n/a	30–40% aged 65+ have mild and 20–30% aged 80+ have moderate hearing difficulties	n/a	n/a
	9	Hearing aids	n = 132 028	10.6% with hearing difficulties	3.29% had hearing aids	n/a
	15	Various	n = 132	13 million people with hearing difficulties in Russian Federation; of these, 1 million are children	n/a	n/a
	31	Various	n = 1253	42% (community dwelling), 35% (institutionalized) participants required hearing services	57% (community dwelling), 50% (institutionalized) participants had hearing aids	n/a



### 3.3.2 Vision

Twelve publications (11.6%) included information about needs related to visual impairment. One was from Germany (11), one from Ireland (22), one from Tajikistan (70), six from the United Kingdom (24, 29, 85, 92, 95, 101) and one from Uzbekistan (100). Two further publications included multiple countries (3, 31). Sample sizes ranged from  $n = 157$  (85) to  $n = 499\ 365$  (24). Four publications focused on children and/or adolescents (11, 29, 85, 101), three on older adults (3, 24, 31), one on young adults (92) and one on all age groups (100). The remaining publications were not clear about the age groups included. Five publications were either national surveys or included data from nationally representative samples (3, 11, 24, 29, 101).

The prevalence of people with visual impairment in publications focusing exclusively on children and/or adolescents ranged from 5% (11) to 50% (101) overall and from 5% (11) to 35.1% (29) in nationally representative samples. For the remaining publications, the prevalence ranged from 14% (24) to 39.7% (3). Spectacles or contact lenses were the assistive products mostly mentioned. Only two publications (22, 100) explicitly mentioned other assistive products. The prevalence of met needs for spectacles or contact lenses

in children and/or adolescents ranged from 29% (85) to 74.7% (11) overall and from 59.1% (29) to 74.7% (11) in nationally representative samples. For the remaining publications, the range was 75% (31) to 90% (24). The reported percentage of people who needed but did not have any or only unsuitable spectacles was 20% (70) and 25.2% (11). One further publication mentioned that 25% of children referred for further vision assessment did not attend (85). No reasons for that were mentioned, however.

There are three main challenges to the interpretation of the 12 publications. The comparison of the data is made difficult due to the focus on, first, different age groups in different settings (e.g. school or eye clinic); second, on different kinds and levels of severity of visual impairment (e.g. refractive error, presbyopia); and third, the vastly different sample sizes. The interpretation of the percentage of people who needed and owned or used assistive technology for visual impairment was further complicated by focusing either on the percentage of people who owned or wore any assistive technology and those who wore suitable assistive technology. Some samples included exclusively people with known visual impairment while others were more representative of the general population. Table 6 presents a summary of the information on prevalence and coverage of assistive technology as it pertains to the functional domain of vision.

**Table 6 Summary of information on prevalence of needs and coverage of assistive technology: vision**

Country	ID	Assistive products	Sample	Prevalence of need	% who own/ use assistive technology	% who do not own assistive technology
Germany	11	Spectacles	n = 1874	5.5% of children and adolescents had visual impairment	74.7% of those with visual impairment wore suitable spectacles	25.2% of those with visual impairment had no or unsuitable spectacles
Ireland	22	Various	n = 14 518	50 600 people with visual impairment	n/a	Recording equipment or portable note-takers 54.7%, audible or tactile devices 52.3%, computer with large print, Braille etc. 51.3%, screen reader 62.3%, scanner 45.4%, magnifiers, large-print or Braille reading materials 27.7%, guidance cane 26.8%
Tajikistan	70	Spectacles	n = 200	24.5% reported visual impairment	n/a	20% unmet need for reading glasses
United Kingdom	24	Spectacles or contact lenses	n = 499 365	14% overall prevalence of visual impairment (mild and low vision)	>90% of participants wore spectacles or contact lenses	n/a
	29	Spectacles	n = 949	31.5% of children needed spectacles	59.1% of children wore spectacles	n/a
	85	Spectacles	n = 157	31% of children had visual impairment (significant refractive error)	12% of children were known to have been prescribed spectacles; 47.3% of those wore them all the time, 26.3% each intermittently or not at all	25% of children were referred for further assessment, of whom 25% did not attend
	92	Spectacles	n = 37	72% had visual impairment	n/a	n/a
	95	Spectacles	n = 3726	11.14% of children were referred to hospital eye service, 53% of those required spectacles (refractive errors)	n/a	n/a
	101	Spectacles	n/a	50% of children needed spectacles	n/a	n/a

Country	ID	Assistive products	Sample	Prevalence of need	% who own/ use assistive technology	% who do not own assistive technology
Uzbekistan	100	n/a	n/a	All: 26.2% adults: 29%; children 13.1% of people (from their total number)	Spectacles or contact lenses: 11.6% Braille assistive technology: 0.5% Large-print materials: 0.6% Audiobooks: 0.3% Recording devices or portable electronic notebooks: 0.3% Text/image-to- screen projectors: 0.2% Personal computer with Braille, large font or speech synthesizer: 0.3% Guidance cane: 0.5%	Spectacles or contact lenses: 23.9% Braille assistive technology: 2.2% Large-print materials: 3.5% Audiobooks: 5.7% Recording devices or portable electronic notebooks: 4.7% Text/image-to-screen projectors: 4.5% PC with Braille, large font or speech synthesizer: 3.6% Guidance cane: 2.4%
Multicountry publications	31	Spectacles or contact lenses	n = 1253	53% (community dwelling), 35% (institutionalized) of participants required eye care (data excl. Sweden)	87% (community dwelling), 75% (institutionalized) of participants had spectacles or contact lenses (data incl. Sweden)	n/a
	3	Various	n/a	39.72% of people aged 65-79 and 50.75% of people aged 80+ have visual impairment (presbyopia)	n/a	n/a

### 3.3.3 Mobility

Twelve publications (11.65%) provided information on mobility impairment. Two were from Germany (40, 41), one each from Ireland (22), the Republic of Moldova (32) and the Netherlands (18), two from Switzerland (38, 50)

and one each from Tajikistan (70), Turkmenistan (80), the United Kingdom (42) and Uzbekistan (100). One further publication included information from multiple countries (3). Assistive products mentioned included wheelchairs, lower-limb prostheses, orthoses, canes, crutches, home adaptations, stairlifts, walkers, braces and ramps. Sample



sizes ranged from  $n = 105$  (42) to  $n = 14\,518$  (22). Three publications focused on adults (18, 41, 50) and four on all age groups (22, 32, 42, 100). The remaining publications were not clear about the age groups included.

Only two publications provided nationally representative information on the need for mobility aids: 3.75% (22) and 17.5% (100). One publication provided information on the prevalence of need in their relatively small sample of  $n = 200$  (80.5% (70)) and four had information only on specific diseases or injuries (lower-limb amputation (3); amyotrophic lateral sclerosis (ALS) (18); spinal cord injury (38); sarcoma (42)). The percentage of overall mobility assistive technology provision was between 64.3% (40) and 80% (32). The provision of wheelchairs differed according to the kind of wheelchair provided, with 98% of ALS patients who needed one having a wheelchair (18), 69% of people with spinal cord injury who needed one having a

manual, 12.6% a powered and only 7.2% a power-assisted wheelchair (38). Between 20% and 50% of children (32, 80) and 38.5% and 50% of adults (32, 41) who needed a wheelchair did not have one; 10% had no mobility aids whatsoever (32). Shockingly, 14% were not provided with a prosthesis after lower-limb amputation (41). Between 31.3% (50) and 68% (18) had a stairlift, 52.2% a powered wheelchair (40) and 22.4% an automatic door opener (50).

There are two main challenges to the interpretation of the 12 publications. The comparison is hindered by a heterogeneous approach to sampling, as well as small and mostly unrepresentative samples. Considering the broad range of mobility aids, it would be helpful to define a set of mobility aids for which access and coverage data are regularly collected. Table 7 presents a summary of the information on prevalence and coverage of assistive technology as it pertains to the functional domain of mobility.

**Table 7 Summary of information on prevalence of needs and coverage of assistive technology: mobility**

Country	ID	Assistive products	Sample	Prevalence of need	% who own/use assistive technology	% who do not own assistive technology
Germany	40	Various	$n = 1479$	n/a	64.3% total supply rates: orthotic devices: 76.6%, therapeutic mobility aids: 57.3%, powered wheelchairs: 52.2%	n/a
	41	Various	$n = 1494$	n/a	70.2% of requested assistive technology was provided	Failed procurement rates: home adaptations (23.3%), orthoses (20.9%), walking aids (20.4%), lift systems and ramps (40.3%), manual wheelchairs (38.5%), powered wheelchairs (52.0%)



Country	ID	Assistive products	Sample	Prevalence of need	% who own/use assistive technology	% who do not own assistive technology
Ireland	22	Various	n = 14 518	3.75% (184 000) people with impaired mobility and dexterity	n/a	Lift, stairlift 64.6%, portable ramps 47.4%, hoist or similar device 36.5%, walking aids 11.4%, manual or electric wheelchair or scooter 22.1%, grab bars or bathroom aids 33.2%
Netherlands	18	Assistive technology and home adaptations	n = 179	65% of ALS patients needed a manual wheelchair and 21% a stairlift	98% of those who needed it had a manual wheelchair and 68% a stairlift	n/a
Republic of Moldova	32	Wheelchairs	n/a	n/a	80% of children and adults own a mobility device; 70% of children and 60% of adults own a wheelchair	20% of children and 50% of adults needing a wheelchair do not own one; 10% do not own any mobility device
Switzerland	38	Various	n = 492	Spinal cord injury patients: crutches 28.5%, walking frame 11.8%, wheelchairs: manual 68.3%, powered 16.8%, power-assisted 15.4%, tractor 37.2%, sport 22.9%; hand bike 29.5%; braces: arms 9.5%, legs 16%;	Crutches 28.4%, walking frame 6.9%, wheelchairs: manual 69%, powered 12.6%, power-assisted 7.2%, tractor 34.2%, sport 19.4%; hand bike 25.2%; braces: arms 4.3%, legs 12.8%;	Crutches 11.4%, walking frame 32.8%, wheelchairs: manual 4.8%, powered 27.2%, power-assisted 47.3%, tractor 21.3%, sport 36.3%; hand bike 26.2%; braces: arms 53.2%, legs 31.6%;
	50	wheelchair, ramp, stairlift	n = 482	n/a	31.3% had a stairlift, 45% a ramp, 22.4% an automatic door opener	14.9% reported to have no assistive technology at all
Tajikistan	70	Various	n = 200	80.5% had at least some difficulty walking or climbing steps; over a third needed a wheelchair	n/a	n/a



Country	ID	Assistive products	Sample	Prevalence of need	% who own/use assistive technology	% who do not own assistive technology
Turkmenistan	80	Wheelchairs	n/a	n/a	n/a	50% of children who need wheelchairs do not have them
United Kingdom	42	Prostheses	n = 105	1035 new diagnoses of extremity bone or soft tissue sarcoma/year in the United Kingdom, of which around 7% will be treated with amputation	9% were given a prosthesis for home use between one week and one month after surgery, 52% between three and six months, 17% between six and 12 months, 4% more than a year after surgery	14% were not provided with a prosthesis
Uzbekistan	100	Various	n/a	All: 17.5% adults: 16.3%; children 23.1% of people (from their total number)	Orthopaedic shoes: 1% Prosthetic leg, arm, or other: 0.6% Cane: 3.1% Crutches: 1.3% Wheelchair: 2% Walking aid: 0.4% Non-prosthetic reaching or grabbing devices: 0.1%	Orthopaedic shoes: 4.7% Prosthetic leg, arm or other: 2% Cane: 6.8% Crutches: 3.8% Wheelchair: 7.5% Walking aid: 4.1% Non-prosthetic reaching or grabbing devices: 1.9%
Multicountry	3	Various	n/a	Lower-limb amputation: 0.1% <15 years to 3.19% of people aged 80+ years	n/a	n/a

### 3.3.4 Self-care

Six publications (5.82%) included information on self-care needs. These came from the Netherlands (18), Sweden (61), Switzerland (50), Tajikistan (70), the United Kingdom (37) and Uzbekistan (100), respectively. Assistive products discussed included shower and bath chairs, handrails,

pressure relief cushions and stoma and incontinence products, as well as home adaptations such as accessible showers. Sample sizes range from n = 200 (70) to n = 511 (37). Three publications focused on adults (18, 37, 50) one on older people (61) and one on all age groups (100). The remaining publication (70) was not clear about the age groups included.





Only three publications provided information on the prevalence of need for assistive technology for self-care, which ranged from 10.9% overall (100), to 21% for incontinence products (70) and 66% for bathroom adaptations (18). The percentage of people who needed and owned assistive technology differed substantially, ranging from 10% (61) to 94% (18) who needed bathroom adaptations and 2.1% to 6.4% who needed stoma or incontinence products (100). The percentage of unmet needs for assistive technology or home adaptations was reported as ranging from 2% for bathroom adaptations (61) to 19.2% (37) who had no assistive technology or adaptations whatsoever, although 77% of those stated that they did not require assistive technology.

There are two main challenges in the interpretation of the six publications. Study samples are small and mostly unrepresentative. Larger, representative study samples would be desirable to obtain a better understanding of the assistive technology needed to support self-care. Furthermore, it would be helpful to define a set of assistive products and home adaptations for which data are regularly collected. This would facilitate cross-country comparisons. Table 8 presents a summary of the information on prevalence and coverage of assistive technology as it pertains to the functional domain of self-care.

**Table 8 Summary of information on prevalence of needs and coverage of assistive technology: self-care**

Country	ID	Assistive products	Sample	Prevalence of need	% who own/use assistive technology	% who do not own assistive technology
Netherlands	18	Home adaptations	n = 179	66% of ALS patients needed bathroom adaptations	94% of those needing them had bathroom adaptations	n/a
Sweden	61	Various	n = 371	n/a	36% of people had assistive technology for furnishings/adaptation, 10% for shower/bath and toileting	6% respectively for furnishings/adaptation and 2% for shower/bath and toileting had an unmet need for assistive technology
Switzerland	50	Home adaptations	n = 482	n/a	18.1% had a grab bar outside and 56.7% next to bathroom or toilet, 62.7% an accessible shower	14.9% had no adaptations
Tajikistan	70	Toilet and shower chairs, incontinence products	n = 200	59% needed toilet chairs, 29% shower chairs and 21% incontinence products	n/a	The need was largely unmet



Country	ID	Assistive products	Sample	Prevalence of need	% who own/use assistive technology	% who do not own assistive technology
United Kingdom	37	Various	n = 511	n/a	80.8% of adults with intellectual disabilities had assistive technology/adaptations; 39.1% special bathroom aids, e.g. hand/grab rails	19.2% of adults with intellectual disabilities had no assistive technology/adaptations, 77.6% of them said none was required
Uzbekistan	100	Various	n/a	All: 10.9% adults: 8.8%; children 20.8% of people (from their total number)	Urinary or other catheters: 0.6% Urine-collecting bags: 0.5% Colostomy bags: 0.4% Bedsore prevention mattresses and cushions: 0.4% Diapers: 3%	Urinary or other catheters: 2.1% Urine-collecting bags: 2.8% Colostomy bags: 2.5% Bedsore prevention mattresses and cushions: 3.6% Diapers: 6.4%

### 3.3.5 Communication

Eleven publications (10.68%) included information related to difficulties in communication. One each came from Germany (40), Ireland (22), Italy (17), the Netherlands (83) and Sweden (61), five were from the United Kingdom (19, 33, 35, 55, 56) and one was from Uzbekistan (100). Sample sizes ranged from n = 73 (17) to n = 14 518 (22). Three publications focused on service providers or health care professionals (55, 56, 83). One addressed children (17), one older people (61) and two all age groups (22, 100). The remaining publications were not clear about the age groups included. Two publications looked at the prevalence of needs for communication assistive technology in people with specific diagnoses (motor neurone disease (33); locked-in syndrome (83)).

The reported prevalence of needs for communication aids ranged from 0.02% (55) to 10.5% (35) of the general population. On a national level, the percentage of people who need communication assistive technology and own and/or use it was reported at between 0.014% and 0.08%

of the general population (35) and 60% of people who need assistive technology (40) and 17% for powered and 10% for non-powered communication aids, in a publication that was not nationally representative (33). The unmet need for communication aids was reported at between 1.9% and 12% overall (61, 83, 100) and between 1.9% and 74.2% for specific assistive products (22, 100).

There are two main challenges to the interpretation of the 11 publications. First, the definitions or means used to diagnose communication difficulties are partly unclear and might vary substantially. In one publication (100), data on communication difficulties were presented together with those on hearing difficulties. Second, sampling strategies differed widely. It would also help to have clearer definitions of the kinds of communication aids under study, i.e. powered or non-powered communication aids. Table 9 presents a summary of the information on prevalence and coverage of assistive technology as it pertains to the functional domain of communication.



**Table 9 Summary of information on prevalence of needs and coverage of assistive technology: Communication**

Country	ID	Assistive products	Sample	Prevalence of need	% who own/use assistive technology	% who do not own assistive technology
Germany	40	Various	n = 1479	n/a	Supply rates for various communication aids: 60%	n/a
Italy	17	Various	n = 73	6.7% of the Italian population have difficulties communicating	n/a	n/a
Ireland	22	Various	n = 14 518	People with disabilities: speech 35 300	n/a	Communications board 59.1%, computer or keyboard 49.8%, voice amplifier 74.2%
Netherlands	83	Various	n = 9570 (health care professionals)	Locked-in syndrome prevalence = 0.00073% of the general population	n/a	12% reported to have no specific assistive technology for communication
Sweden	61	Various	n = 371	n/a	18% had assistive technology for communication	8% of those needing assistive technology for communication did not have it
United Kingdom	19	AAC	n/a	0.5% of the United Kingdom population could benefit from AAC	n/a	n/a
	33	AAC	n = 371	43.4% of people with motor neurone disease have at least detectable difficulties communicating	17.3% had AAC, a further 10.9% used non-/low-tech AAC strategies (e.g. communication book, board or cards)	n/a
	35	Various	n/a	0.5% of the United Kingdom population require AAC	0.014%–0.08% of the total population may currently use powered AAC	n/a
	55	Speech generating devices	n = 98 (service providers)	>0.0155% of the general population need a speech generating device	Total number of individuals known to be using powered communication aids was 0.08% - 0.05% of service's catchment population	n/a



United Kingdom	56	AAC	n = 220 (service providers)	The mean total AAC caseload was 0.09% of the catchment populations The mean high-tech communication aid caseload reported was 0.017% of the catchment populations	n/a	n/a
Uzbekistan	100	Various	n/a	All: 10.5% adults: 9.4%; children 15.6% of people (of the total number)	Emails or chat: 0.4% Messaging devices: 0.2% PC or keyboard: 0.2% Communication board with symbols/pictures: 0.1%	Emails or chats: 4.2% Messaging devices: 2.9% PC or keyboard: 3.8% Communication board with symbols/pictures: 1.9%

AAC: augmentative and alternative communication.

### 3.3.6 Cognition

Only two publications (1.94%) addressed cognitive impairment. One was from Ireland (22) and one from the United Kingdom (67). Sample sizes were  $n = 111$  (67) and  $n = 14\,518$  (22). The Irish publication reported the total number of people with difficulties regarding remembering and concentrating in Ireland at  $n = 113\,000$  (2.3% of the total population) and those with intellectual and learning disabilities at  $n = 71\,600$  (1.5% of the total population). These numbers included all age groups.

The United Kingdom publication reported that 57.6% of the sample have had their assistive technology needs met, while 39.6% had unmet needs. Similarly, the Irish publication put unmet assistive technology needs at between 36.2% and 49.0%.

There is one major challenge to the interpretation of the evidence on the functional domain of cognition. Clearly, not enough evidence is generated on the needs of people with cognitive impairment. Future

research should carefully consider the different needs for assistive technology of people with cognitive impairment, as well as their ability to engage with this technology. To ensure cross-country comparisons, research should include clear information on the way cognitive impairment was defined or diagnosed, and study samples should ideally be representative. Table 10 presents a summary of the information on prevalence and coverage of assistive technology as it pertains to the functional domain of cognition.

To summarize this section of the report, the evidence on the prevalence of needs for assistive technology, as well as coverage within the WHO European Region, is very sparse. The interpretation of the data and comparisons are generally hindered by unclear or varying definitions of the functional impairment, small and often unrepresentative sample sizes and broad variations of assistive products included. More research is needed across the WHO European Region. It would help if researchers were to agree on standards for data collection.



**Table 10 Summary of information on prevalence of needs and coverage of assistive technology: cognition**

Country	ID	Assistive products	Sample	Prevalence of need	% who own/ use assistive technology	% who do not own assistive technology
Ireland	22	Various	n = 14 518	People with difficulties remembering and concentrating n = 113 000; and with intellectual and learning difficulties n = 71 600	n/a	Screen-reading software, learning support software 49.0%, general products and technology for education 45.9%, products or technology for personal use in daily living 36.2%
United Kingdom	67	Various	n = 111	n/a	57.6% Assistive technology needs have been met	39.6% unmet assistive technology needs

### 3.4 Facilitators and barriers to access and coverage

In this section, we present information on the facilitators of and barriers to access and coverage of assistive technology, i.e. which factors make it easier or more difficult for people needing assistive technology to access it. Most of the information presented below was found in publications from various countries. Because of this, the information is not presented for each individual country. Exceptions are explicitly mentioned in the text and refer to unique barriers or strategies to mitigate them.

#### 3.4.1 Physical accessibility

This category describes barriers and facilitators related to the physical accessibility of assistive technology for people who need it. It describes factors related to health care professionals and assistive technology provision (process, products, funding and policy and regulations).

#### 3.4.1.1 Factors related to health professionals

Barriers and facilitators discussed here are related to the GATE initiative 5P priority area **Personnel** (2).

Limited knowledge among and training of health care professionals and other frontline staff in assistive technology was one of the main barriers that impacted assistive technology provision for users (4, 10, 15, 21, 25, 32, 35, 45, 46, 53, 65, 69, 71, 74, 75, 76, 77, 78, 82, 86, 99). For example, many people with spinal cord injury identified inaccurate assessment by assistive technology service providers as one of their main barriers to accessing adequate wheelchairs and seating aids (44). High turnover of health care professionals and lack of personalized care were also identified by some users as potential barriers for accessing assistive technology, as they impacted the users' ability to build relationships with health care professionals (10, 44). Some health care



professionals also identified the lack of robust research evidence as one their main reasons for not recommending the use of assistive technology to their patients (25). On the other hand, retraining health, social and educational staff in assistive technology provision was identified as a potential factor that could facilitate assistive technology access to those who need it (15, 35, 45, 71, 80, 94). Some users also viewed the proactive approach followed by health care professionals in assessing their assistive technology needs and the positive relationship with them as main facilitators for a successful assistive technology deployment to users (10, 44). Additionally, improving the working conditions of trained professionals was identified as a key facilitator to retain them, which could result in improving access to assistive technology (69).

### 3.4.1.2 Factors related to assistive technology provision

**Process/provision:** barriers and facilitators discussed here are related to the GATE initiative 5P priority area **Provision** (2).

One of the main barriers for accessing assistive technology was related to the process of applying for an assistive technology device. The terms “complicated” and “bureaucratic” were commonly used in the reviewed publications to describe the process of assistive technology application (2, 15, 28, 44, 45, 49, 82, 86, 97). The assistive technology provision system was also seen as fragmented, lacking in coordination between various delivery mechanisms and with limited availability (15, 21, 27, 34, 62, 63, 64, 69, 101). Many users also felt that they lacked knowledge about the process and had limited understanding of how to navigate the system to access assistive technology (14, 46, 61, 68, 74). Another major reason for delays in accessing assistive technology

was the long time the process takes (2, 10, 13, 15, 21, 41, 48, 49, 51, 58, 66, 71, 86, 99, 102), especially to obtain funding approval (21, 35, 48) and for fitting of assistive products (66, 96). Some users also expressed their concerns about the lack of specialized services and continuity of assistive technology provision across the life cycle (21, 48, 71, 81).

On other hand, improving the coordination between organizations involved in assistive technology provision and having a single-point access system for referrals, trials, procurement, fitting, information and advice were identified as major facilitators to accessing assistive technology (15, 21, 34, 42, 45, 49, 51, 59). Another facilitator to accessing assistive technology was the availability of services within close distance to the user (10, 91). Conducting home visits and assessments in a familiar environment, especially for children, was also identified as facilitator for assistive technology access (72, 101). Primary care was described as an ideal setting to manage assistive technology provision (74).

**Products:** barriers and facilitators discussed here are related to the GATE initiative 5P priority area **Products** (2).

The limited information available to potential users about assistive products and their accessibility was commonly mentioned in the reviewed publications as a barrier for accessing assistive technology (6, 21, 25, 34, 35, 45, 46, 54, 61, 65, 69, 70, 74, 76, 77, 80, 87, 97). Limited supply and provision of assistive products, especially those with highly specialized functionality (e.g. for children with motor disability or cerebral palsy) was another concern commonly raised in the reviewed publications (4, 5, 32, 54, 68, 69, 70, 72, 80, 82, 102). Some users also received limited training in using the assistive products and, as a result, had limited skills, increasing their risk of



injury (15, 102). Inadequate aftercare services for assistive products, such as repair services, was also raised as a potential concern (5, 48). On the other hand, to improve access to assistive technology, it was suggested that more resources and information should be made available to users to increase their awareness of assistive products and their availability (4, 10, 21, 45, 53, 59, 61, 80, 97). In addition to online resources, community-based channels, local initiatives and peer support groups were seen as good sources for providing information (21, 34, 45, 76). To ensure users have access to the correct assistive technology device, it was also suggested that they should be involved in the trial and assessment of the product and that records of this process should be maintained (10, 45).

**Funding:** assistive technology funding sources vary greatly within the WHO European Region and include State funding, insurance coverage, out-of-pocket expenses and donations. Limited funding for assistive technology products and support services was one of the main barriers related to physical accessibility (15, 25, 27, 28, 35, 44, 45, 48, 62, 63, 64, 69, 72, 75, 84, 86, 102), with all assistive products not reimbursed in several countries. This limited funding resulted in limited choices available to users, with some funded products not suitable for their needs (10, 45, 81, 84). Some users also described the process to apply for funding as “effortful” and “painful”, often taking a long time and usually involving several sources (21, 35, 48). Additionally, rejection of funding applications, especially by health insurance and for products not in the dispensation scheme, was identified as another barrier for limited access, with the reasons for rejection not always very clear (18, 40, 41, 82). Limited information was also provided to users for assistive products that were not available within funded schemes or on other possibilities and alternatives (25, 81). The lack of national standards on funding assistive products was also identified as a potential barrier to accessing assistive technology (14, 35, 76, 89, 93). On the other hand, it was suggested that funding for several assistive-technology-related services should be increased, including training

and salaries of personnel and transportation of equipment (13, 15, 32, 45). Another suggestion to facilitate access to assistive-technology-related funding was to clarify the funding arrangements and the commissioning for service delivery (35).

**Regulation and policy:** barriers and facilitators discussed here are related to the GATE initiative 5P priority area **Policy** (2).

Regulation and policy were other factors that influenced the physical accessibility of assistive technology. For example, the fluctuation in national prescription standards was identified as one of the main barriers to accessing assistive technology in the reviewed publications (2, 5, 10, 21, 53, 68, 72, 82, 94). Some health care professionals also expressed their concerns about lack of evidence-based assessment, prescription procedures and application of standards on specific types of assistive technology (25, 96). Additionally, absence of a government body or committee with oversight over assistive technology and a lack of policy attention to assistive technology were identified as potential barriers to accessing the technology (21, 45). Accordingly, it was suggested that developing rules, precise guidelines and service quality standards for assistive technology services (e.g. prescription and delivery) can potentially improve access (2, 21, 49). Other suggestions included publishing a policy statement to direct the development of an assistive technology support system and paying more attention to assistive technology in policies that target people with disabilities and older adults (21, 34).

### 3.4.2 Financial affordability

Many people needing assistive technology found financial affordability a significant barrier to accessing and using it (1, 14, 15, 21, 42, 49, 53, 57, 58, 60, 68, 77, 80, 91). Some assistive products were not, or only partially, funded or covered by insurance (5, 13, 15, 54, 75). Not only is



spending on assistive technology often insufficient to meet the needs of the people, but it arguably also represents poor value for money, as people's choices are limited and they must make do with the cheapest options, which often barely meet their needs (1, 34, 87). For example, standard wheelchairs were mostly covered, whereas any special modifications or powered wheelchairs were not (5, 44, 72). There was also often indirect expenditure related to assistive technology which was not funded or reimbursed, such as the cost of batteries, transportation to assistive technology assessment and fitting sites, or assistive technology maintenance and repairs (4, 80, 96, 102). Some assistive products were only partially covered, requiring copayments from users (68) or monthly rental fees, for example in the case of wheelchairs in Uzbekistan (5). People sometimes found it hard to obtain information about which products were fully or partially funded or reimbursed (81) or which assistive products were covered by their insurance – if they even had any (1).

Having to pay out-of-pocket for assistive technology was a substantial barrier for many people. People living with disabilities already often have a reduced income, as many are not able to work or face discrimination in the labour market, which means that they must often rely on social benefits (1, 72). This means that even relatively affordable assistive products such as reading glasses are inaccessible for many people who need them, as acquiring them could mean not having enough money left for essentials such as food or heating (70, 81). Unsurprisingly, more unmet needs for expensive assistive products can be found in people who struggle financially (50). In some countries, help with funding assistive technology was available from multiple sources, including various government departments and charities. However, applying for funding from these different sources was often very difficult and time-consuming (35, 39).

Pricing of assistive products was sometimes found to be difficult to understand, for example for glasses (91) or hearing aids (58), where there could be large and

unexplained price differences between products. It was found that some people avoid assessment for certain disabilities (e.g. eye examinations) for fear of being pressured into purchasing an assistive product (60). This appeared to be especially problematic when the providers who conducted the needs assessment also provided the assistive products and stood to make financial gains. To avoid long wait times for assessment, some people paid for private services – if they could afford them (21, 58).

An important first step in solving some of the issues mentioned above would be to increase the commitment of countries to provide sufficient funding. This could be achieved by furthering an understanding of the value for money that assistive technology represents, which could be facilitated by expanding the evidence base (21). Commonly used assistive technology could be centrally procured to ensure the best price-quality ratio (34). Government ownership and lending of assistive technology can ensure that people needing products have access for free (13, 45, 79), and that no longer used assistive technology can be refurbished and supplied to another user (13, 79). However, limited budgets can have an impact on the availability of assistive technology. Delivering assistive technology to all people who need it, whatever their financial situation, might help eliminate differences in accessibility of assistive technology related to socioeconomic status (61). Where this is impossible, needs and means tests must not disadvantage people with fewer financial resources (25, 34, 48). There needs to be more clarity about the respective responsibilities of stakeholders involved in assistive technology financing and provision and interdepartmental collaboration should be facilitated (35, 49). Voucher systems have been introduced in Armenia and the United Kingdom for some types of assistive technology (4, 79). In the United Kingdom, for example, vouchers are provided at the value of a wheelchair which would have been provided by public services and can be used to subsidize the private procurement of a more suitable wheelchair (79). Capping the maximum amount of copayments or out-of-pocket





expenses for assistive technology was another way to provide financial assistance (76, 79, 93). Tajikistan reimbursed travel and subsistence costs for users and their carers when travelling to assistive technology assessment and delivery services (45). An important source of assistive products or financial assistance were nongovernmental organizations and private donors (32, 35, 45, 54, 72, 75, 79, 80, 99). Information and counselling on assistive technology must be independent, that means provided without a motive to gain profit from assistive product provision (53).

### 3.4.3 Acceptability

Barriers and facilitators discussed here are related to the GATE initiative 5P priority area **People** (2).

Some people were afraid of stigmatization from using assistive technology, particularly hearing aids, and saw using assistive technology as a sign of vulnerability, frailty and old age (8, 16, 21, 77, 80, 87, 88, 91). This appears to be specific to functional limitations where the use of assistive technology draws attention to otherwise invisible limitations. As such, people had to weigh the benefits of assistive technology against the threat it could present for their social identity and self-esteem and only accepted it when other treatment options failed (16). Having previous negative experiences with low-quality assistive products or services (70) or having friends or family who had negative experiences (1, 88, 89), had an impact on the acceptability of assistive technology. Some people found assistive products painful to wear (66) or were not able to use them (15, 80). Ill-fitting assistive products (15, 66, 70) or unpleasant design of products (58, 91, 92) also affected their acceptability. There are also indications that, for some acquired disabilities (e.g. spinal cord injuries), assistive technology is prescribed and fitted too soon, not allowing for enough time to adapt to the changes in abilities and environment (39). This was also associated

with shortening hospital stays and reduced rehabilitation sessions, leaving less time to assess developing needs (39). In some cases, particularly in relation to hearing loss, people did not have the intrinsic motivation to acquire assistive technology: some did not realize their impairment or perceive it as severe enough to warrant assistive technology (58, 74, 88) or had no interest in improving their condition (1, 41) while others simply felt they did not need assistive technology (15). External pressure from family and friends to obtain assistive technology to compensate for hearing loss led, in some cases, to a perceived threat to freedom and autonomy which resulted in avoidance of assistive technology (88). Regarding visual impairment, some people were afraid of eye examinations or had concerns about the potential of inaccurate prescriptions (91).

There were many suggestions regarding how to minimize stigmatization: raising the awareness of the prevalence of the condition in the general population (8, 74, 88), improve the image of ageing and disability (61, 74) and assistive technology (8, 74), celebrate positive role models who use assistive technology (74), improve the design of assistive technology (16, 74) and increase assistive technology users' self-esteem (8). Assisting people to realize and come to terms with their condition – sometimes aided by family and friends – could also help them accept assistive technology (58, 74). Social support – emotional, informational, instrumental and advocational – was generally seen as an important factor for people not only to access, but also to accept assistive technology (26, 89). It was mentioned that family and friends could benefit from campaigns to help them communicate more positively with the person living with a disability to enhance their competence and autonomy and discover their intrinsic motivation to seek assistive technology, rather than exerting too much pressure (74). People with a strong intrinsic motivation were seen as much



more likely to act, i.e. pursue assistive technology to achieve their goals such as using assistive technology to pursue leisure activities (1, 74). In the case of communication aids, introducing them as soon as possible and using and assessing them in the user's natural environment proved important factors for acceptability (10, 30). Being able to demonstrate the

effectiveness of assistive technology, for example hearing aids, could also influence acceptability (1). Another useful strategy was lending assistive technology, free of charge, for a trial period (35, 39) or enabling people access to assistive technology similar to technology with which they were already familiar (82).





timely process of application for assistive technology provision, as well as societal stigma. These barriers are consistent with the findings of a recent review of international research by Howard et al. (22). However, it should be acknowledged that the evidence for each individual country in the WHO European Region, and indeed for each of the functional categories, is very limited. It also needs to be considered that the countries within the Region are historically, culturally, politically, geographically and economically very diverse. Accordingly, transferability of any of the findings of this review to any other country within the Region must be carefully considered. More robust data on every country would be desirable. Many suggestions about how to address the identified barriers have been made by the authors of the included publications and presented throughout. Improving the situation for people needing assistive technology will require a collaborative approach that involves all stakeholders, including policy-makers, health care professionals,

carers and society. An important first step seems to be the acknowledgement of the beneficial cost-benefit assessment of assistive technology for the person needing assistive technology, as well as for society at large. Furthermore, the importance of a person-centred and, ideally, participatory approach to the design and delivery of assistive technology and assistive technology-related services cannot be sufficiently stressed. Many barriers to accessibility and acceptability of assistive technology result from a limited understanding of the needs and lived experience of users.

It is possible that more evidence on the prevalence of need, access and coverage of assistive technology is available in the individual countries of the WHO European Region. Some of this evidence may have been missed by this review, despite considerable efforts to capture both peer-reviewed publications and other types of documents published since 2010.



# 5 Recommendations

The following are key recommendations based on the main findings of the evidence synthesis.

- 1. The review clearly shows that evidence on the prevalence of need for assistive technology and on assistive technology access and coverage is very sparse (refer to section 3.3). Thus, there is a need to collect more information, more regularly, from all countries in the WHO European Region on the prevalence of needs for assistive technology and whether these needs are met or unmet. This information should be publicly accessible.**
- 2. The review also clearly shows that available data lack comparability because of their varying definitions of functional impairments, the broad variations of the assistive products included and the inclusion of different age groups in different settings. Therefore, there is a need to ensure comparability of collected evidence and agree upon standards for data collection throughout the WHO European Region, including frequency of data collection and reporting, sampling strategies, definitions of functional limitations and assistive products and age groups included. We recommend the development of a standardized tool for data collection on assistive technology, which could be used alone or integrated into other surveys (e.g. household expenditure survey, census). The WHO Regional Office for Europe could take the lead in the development of such a tool and support its consistent deployment and**
- implementation in the Region. This could help to achieve a better understanding of the situation in individual countries and facilitate international collaboration and the development of shared goals and initiatives.**
- 3. Another important consideration for future data collection on assistive technology in the WHO European Region is ensuring that the collected data are nationally representative, as the review highlights a lack of data in most countries of the Region. Data should also be collected on all functional categories – hearing, vision, mobility, self-care, communication and cognition. Furthermore, all age groups need to be represented in the data collection, to make sure that countries have a complete and accurate picture of their coverage and needs for assistive technology.**
- 4. The report identified several barriers to accessing assistive technology in the WHO European Region (see section 3.4). These include inadequate or insufficient training of health care professionals, limited information on available and funded assistive products, limited options for public funding and a bureaucratic and long-drawn-out process of application for assistive technology provision, as well as societal stigma. All stakeholders, including policy-makers, health care professionals, carers and society, will need to join in efforts to address these barriers and improve people's access to assistive technology.**



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# Annex 1 Example search string for Scopus

Boolean	Key concepts	Boolean	Search terms
–	AT	OR	((TITLE-ABS-KEY (“Assisti* technolog*” OR “Self-Help Devices” OR “Assisti* Product*” OR “Assisti* device*” OR “Assisti* aid*” OR “Hearing Aid*” OR “Correction of Hearing Impairment” OR “Communication aids for disabled” OR “Sensory aids” OR “Audiovisual aids” OR canes OR wheelchair* OR “Therapeutic footwear*” OR handrail* OR “grab bar*” OR “Portable ramp*” OR rollator* OR “walking frame*” OR walker* OR “standing frame*” OR “club foot brace*” OR crutches OR tricycle* OR “travel aid*” OR “Toilet chair*” OR “shower chair*” OR “Alarm signaller*” OR “wireless remote microphone*” OR “fall detector*” OR “personal emergency alarms system*” OR “Geographic Information Systems” OR “Hearing loop*” OR “FM system*” OR “deafblind communicator*” OR “Medication organizer*” OR “pill organizer*” OR “simplified mobile phone*” OR “time management product*” OR “Incontinence Pad*” OR “Incontinence product*” OR “Pressure relief cushion*” OR “Pressure relief mattress*” OR “Digital Accessible Information System” OR braille OR “Talking watch*” OR “touching watch*” OR eyeglasses OR spectacles OR magnifier* OR “Screen reader*” OR “speech generating device*” OR “communication software” OR “communication board*” OR “closed captioning display*” OR “keyboard and mouse emulation software” OR “gesture to voice” OR “Personal digital assistant*” OR “video communication” OR prostheses OR orthoses ))
AND	AT functional category	OR	(( TITLE-ABS-KEY ( mobility OR rehabilitat* OR “disabled person*” OR disabil* OR vision OR sight OR visual* OR blind* OR hearing OR acoustics OR audio OR auditi* OR communication OR cogniti* OR “Self-care” OR “ Self care” OR “activit* of daily living” ))
AND	Countries of the WHO European Region	OR	(( TITLE-ABS-KEY ( denmark OR danish OR “finland OR “finnish OR iceland* OR norway OR norwegian* OR sweden OR swedish OR austria* OR belgium OR belgian OR czech* OR czechia OR france OR french OR german* OR “Northern Ireland” OR ireland OR irish OR luxembourg* OR monaco OR monacan OR monegasque OR netherlands OR dutch OR switzerland OR swiss OR uk OR “United Kingdom” OR england OR english OR scotland OR scottish OR wales OR welsh OR slovenia* OR andorra* OR croatia OR croats OR greece OR greek OR italy OR italian* OR malta OR maltese OR portugal OR portuguese OR spain OR spanish OR “San Marino” OR sammarinese OR israel* OR cyprus OR cyriot OR albania* OR armenia* OR azerbaijan* OR bulgaria* OR georgia* OR macedonia* OR “Bosnia and Herzegovina” OR bosnian* OR poland OR polish OR romania* OR slovak* OR serbia* OR montenegro OR montenegrin* OR turkey OR turkish OR belarus* OR estonia* OR hungary OR hungarian* OR latvia* OR lithuania* OR moldova* OR russia* OR ukraine* OR kyrgyz* OR turkmenistan OR turkmen* OR uzbek* OR kazakhstan* OR tajik* OR kosov* OR scandinavia* OR “Nordic Countries” OR “Central Asia” OR europe* OR eu OR “Balkan Peninsula” OR “Mediterranean Region” OR transcaucasia ))
AND	Access and coverage Barriers and facilitators	OR	(( TITLE-ABS-KEY ( access* OR coverage OR facilitator* OR barrier* OR experience* OR accept* OR “financ* OR “needs assessment” OR “patient satisfaction” OR “Health Services Needs and Demand” OR “Health Services Accessibility” OR “Service provision” OR “service delivery” ) )





# Annex 2 Email template for national contacts



Dear [name]

We have your contact details from [insert].

We are contacting you **on behalf of the World Health Organization Regional Office for Europe**. We are currently conducting a synthesis of existing evidence on assistive technology (AT) in the WHO European Region to inform and support development of AT policies and services.

We are looking to understand current AT coverage within the WHO European Region and identify assistive products, barriers and facilitators of full coverage. Much of the required evidence is expected to be found in local data sources (e.g. government or insurance reports). **Your support and insight as an expert on AT in [country] is essential to help us identify and access any such data sources.** Attached you will find a checklist which should give you a good understanding of the kind of information we are looking for and can help you to identify suitable data sources and information within. **Please return any completed checklists by Friday, 15 January 2021.**

Please get in touch if you want to know more about this project and are able to help.

If you know of anyone else we should contact about this issue in your country or any other country within the WHO European Region, we would be very grateful if you could share their contact information with us.

We are looking forward to hearing from you soon.

Best regards

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Consultants:

Sarah **Abdi**, MSc, BSc (Hons.)

Mag. Alice **Spann**, BSc, MPH

On behalf of Satish **Mishra**, Disability and Rehabilitation Programme, WHO Regional Office for Europe

*Background: According to the World Report on Disability, about 135 million people in the WHO European Region are living with a disability. AT has a critical role to play in preventing and minimizing the limitations of function associated with injury, chronic conditions and ageing. Examples of assistive products include hearing aids, wheelchairs, spectacles*



*and prostheses, among many others. Health systems should be equipped to provide services that optimize function and AT should be incorporated into the package of essential services. The Sustainable Development Goals and their emphasis on equity and universal health coverage offer a window of opportunity to mobilize the broader health community towards the achievement of this objective as an essential step towards ensuring healthy lives and promoting well-being by 2030. A WHO resolution on improving access to AT (World Health Assembly resolution WHA71.8) recommends actions at country level where everyone in need has access to high-quality, affordable, assistive products to lead a healthy, productive and dignified life.*



# Annex 3 Checklist for local data sources



## ASSISTIVE TECHNOLOGY CHECKLIST

Dear colleague,

Thank you very much for agreeing to help with the important task of collecting evidence on the use, access and coverage of Assistive Technology in your country. To make this task a bit easier, we have created this checklist which we would kindly ask you to use. This should give you a good understanding of the kind of information we are looking for and can help you to identify suitable data sources and information within. To be eligible for inclusion, the data source should have been published **between 2010 and 2020**.

**If there is more than one data source which addresses the issues described in this checklist, please use a separate copy of this checklist for each data source.**

**DESCRIPTION OF THE DATA SOURCE:**

**1) Please enter the reference of the data source (so far as available)**

Original title: \_\_\_\_\_

Title translated into English: \_\_\_\_\_

Author(s)/authoring organization: \_\_\_\_\_

Year of publication: \_\_\_\_\_ Publication language: \_\_\_\_\_

URL: \_\_\_\_\_



**2) Which option most adequately describes the data source?**

- ☐ Research report
- ☐ Evidence synthesis
- ☐ Dissertation/thesis
- ☐ Conference paper/presentation
- ☐ Government publication
- ☐ Insurance report
- ☐ Nongovernment organization report (please specify) \_\_\_\_\_
- ☐ Other: \_\_\_\_\_

**3) If applicable, please indicate which study design was used:**

- ☐ Quantitative design (e.g. survey, trial, etc.)
- ☐ Qualitative design (e.g. interviews, focus groups, etc.)
- ☐ Mixed methods (e.g. survey and interviews, etc.)
- ☐ Other: \_\_\_\_\_
- ☐ Not applicable

**4) If applicable, please indicate the sample size:**

- ☐ N = \_\_\_\_\_
- ☐ Not applicable

**5) If applicable, please indicate which age group(s) were included in the data source (Multiple selection possible):**

- ☐ "Children" (0–12yrs)
- ☐ "Young people" (13–18yrs)
- ☐ "Adults" (19–64yrs)
- ☐ "Older people" (65+yrs)
- ☐ Not specified
- ☐ Not applicable

**COVERAGE OF ASSISTIVE TECHNOLOGY:**

**6) Please indicate which Assistive Technology group(s) are addressed in this data source (Multiple selection possible):**

☐ Mobility

*Specific Assistive Products mentioned:* \_\_\_\_\_

☐ Vision

*Specific Assistive Products mentioned:* \_\_\_\_\_

☐ Hearing

*Specific Assistive Products mentioned:* \_\_\_\_\_

☐ Communication

*Specific Assistive Products mentioned:* \_\_\_\_\_

□ Cognition

*Specific Assistive Products mentioned:* \_\_\_\_\_

☐ Self-care

*Specific Assistive Products mentioned:* \_\_\_\_\_

**7. Does the data source mention how many people/the percentages of the population of your country who has a need for Assistive Technologies?** (This will be mostly people living with disabilities or noncommunicable diseases and older adults).

☐ Yes: \_\_\_\_\_

☐ No

**8. Does the data source mention the percentage of the population of your country that needs Assistive Technology *and* owns and/or uses and/or is satisfied with Assistive Technology?**

☐ Yes: \_\_\_\_\_

☐ No

**9. Does the data source mention the percentage of the population of your country that needs Assistive Technology but does not own and/or use and/or is satisfied with Assistive Technology?**

- ☐ Yes: \_\_\_\_\_
- ☐ No

**BARRIERS AND FACILITATORS TO ACCESS TO AND COVERAGE OF ASSISTIVE TECHNOLOGY:**

**A) PHYSICAL ACCESSIBILITY**, i.e. the availability of good services within reasonable reach of those who need them and with opening hours, appointment systems and other aspects of service organization and delivery that allow people to obtain the services when they need them.

**i. Does the data source mention any BARRIERS associated with PHYSICAL ACCESSIBILITY?**

- ☐ Yes: \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- ☐ No

**ii. Does the data source mention any FACILITATORS associated with PHYSICAL ACCESSIBILITY?**

- ☐ Yes: \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- ☐ No

**B) FINANCIAL AFFORDABILITY**, i.e. people's ability to pay for services without financial hardship. It considers not only the price of products and services but also indirect and opportunity costs such as the costs of transportation to and from facilities and of taking time away from work. Affordability is influenced by the wider health financing system and by household income.

**i. Does the data source mention any BARRIERS associated with FINANCIAL AFFORDABILITY?**

- ☐ Yes: \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- ☐ No



**ii. Does the data source mention any FACILITATORS associated with FINANCIAL AFFORDABILITY?**

☐ Yes: \_\_\_\_\_

\_\_\_\_\_

☐ No

**C) ACCEPTABILITY** i.e. people's willingness to seek services. Acceptability is low when people perceive services to be ineffective or unsuitable or when social and cultural factors such as language, age, sex, ethnicity or religion discourage people from seeking services.

**i. Does the data source mention any BARRIERS associated with ACCEPTABILITY?**

☐ Yes: \_\_\_\_\_

☐ No

ii. Does the data source mention any **FACILITATORS** associated with **ACCEPTABILITY**?

☐ Yes: \_\_\_\_\_

\_\_\_\_\_

☐ No

**D) Does the data source mention any further BARRIERS?**

☐ Yes: \_\_\_\_\_

\_\_\_\_\_

☐ No

**E) Does the data source mention any further FACILITATORS?**

- ☐ Yes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- ☐ No
- 

Please return the completed checklist to [who.assistivetechonology@gmail.com](mailto:who.assistivetechonology@gmail.com) by Friday, 15 January 2021.

If you have any questions, please contact Sarah Abdi and Alice Spann via [who.assistivetechonology@gmail.com](mailto:who.assistivetechonology@gmail.com).





# Annex 4 Overview of included publications

RESULTS																			
Country	ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Language	Identified via	Funct. domain ***	Specific assistive products discussed	Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability
FRA	1	Abdellaoui A, Huy PTB. Success and failure factors for hearing-aid prescription: results of a French national survey. Eur Ann Otorhinolary. 2013;130(6):313–9.	JA	QT	n = 184	A (55+)	ENG	DB	H	Hearing aids	✓	✓	✗	✗	✓	✗	✓	✓	✓
SWE	2	Adolfsson P, Lindstedt H, Pettersson I, Hermansson LN, Janeslätt G. Perception of the influence of environmental factors in the use of electronic planning devices in adults with cognitive disabilities. Disabil Rehabil Assist Technol. 2016;11(6):493–500.	JA	QL	n = 12	A (18–65)	ENG	DB	CG	Electronic planning devices	✗	✗	✗	✓	✗	✗	✓	✗	✗
DNK, ESP, ARM, UKR	3	Al-Tayar R, Humbert T, Di Pietro L, Guo L, Zhang W, Tebbutt E et al. A rapid assessment on access to assistive technology in the World Health Organization's European Region. In: Layton N, Borg J (eds.). Global perspectives on assistive technology: proceedings of the GREAT Consultation 2019, World Health Organization, Geneva, Switzerland, 22–23 August 2019, Vol. A. Geneva: World Health Organization; 2019 ( <a href="http://at2030.org/static/at2030_core/outputs/Global-Developments-in-Assistive-Technology-A11.pdf">http://at2030.org/static/at2030_core/outputs/Global-Developments-in-Assistive-Technology-A11.pdf</a> , accessed 3 July 2021).	CP	QT	n/a	n/a	ENG	DB	Various	Various	✓	✗	✗	✗	✗	✗	✗	✗	✗



Country		ID	REFERENCE	Type of publication*		Study design**	Sample size	Age groups included				Identified via		Funct. domain ***	Specific assistive products discussed	RESULTS									
								C	ARM & ENG	CL	H, V, M, SC	Various	Prevalence of need			% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability		
ARM	4	Մանկական վերականգնողական ծառայությունների գնահատում [Rapid assessment evaluation of rehabilitation services for children in Armenia]. Yerevan: Arabkir Medical Centre – Institute of Child and Adolescent Health, ArBes Health Center, Arabkir United Children's Charity Foundation, Ministry of Health, UNICEF; 2019 ( <a href="http://www.unicef.org/armenia/en/reports/evaluation-rehabilitation-services-children-armenia">http://www.unicef.org/armenia/en/reports/evaluation-rehabilitation-services-children-armenia</a> , accessed 3 July 2021).	RR (NGO)	Review	n/a	C	ARM & ENG	CL	H, V, M, SC	Various	✓	×	×	✓	×	×	✓	×	×	✓	×	×	×	×	×
ARM, AZE, GEO, TKM, UZB	5	Artikova V. Central Asia region: desk review on disability part 1 . Falls Church (VA); New Editions Consulting; 2015.	RR	Review	n/a	n/a	ENG	FR	n/a	n/a	✓	✓	×	✓	n/a	Various	✓	×	×	✓	×	×	×	×	×
KAZ, KGZ, TJK, TKM, UZB	6	Artikova V. Central Asia region: desk review on disability part 2. Falls Church (VA); New Editions Consulting; 2015.	RR	Review	n/a	n/a	ENG	FR	n/a	n/a	✓	×	×	✓	n/a	Various	✓	×	×	✓	×	×	×	×	×
UK	7	Benova L, Grundy E, Ploubidis GB. Socioeconomic position and health-seeking behavior for hearing loss among older adults in England. J Gerontol B Psychol Sci Soc Sci. 2015;70(3):443–52.	JA	QT	n = 8780	OP	ENG	DB	H	Hearing aids	✓	✓	×	✓	Hearing aids	✓	×	×	✓	×	×	×	×	×	×
UK	8	Bennion A, Forshaw MJ. Insights from the experiences of older people with hearing impairment in the United Kingdom: recommendations for nurse-led rehabilitation. Int J Older People Nurs. 2013;8(4):270–8.	JA	QL	n = 9	OP	ENG	DB	H	Hearing aids	×	×	×	×	Hearing aids	×	×	×	×	×	×	×	×	×	✓
GER, FRA, UK	9	Bisgaard N, Ruf S. Findings from EuroTrak surveys from 2009 to 2015: hearing loss prevalence, hearing aid adoption and benefits of hearing aid use. Am J Audiol. 2017;26(3S):451–61.	JA	QT	n = 132 028	All	ENG	DB	H	Hearing aids	✓	✓	✓	✓	Hearing aids	✓	✓	×	✓	×	×	×	×	×	×



Country	ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Language	Identified via	Funct. domain ***	Specific assistive products discussed	RESULTS								
											Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability
AZE	12	Cabinet of Ministers of Azerbaijan Republic. Əliliyi olan şəxslərə dövlət büdcəsi hesabına verilən reabilitasiya vasitələrinin növlərinin Siyahısı'nın təsdiq edilməsi barədə Azərbaycan Respublikasının Nazirlər Kabinetinin 18 dekabr 2020-ci il təxli 500 nömrəli Qərarı [Order of the Cabinet of Ministers of Azerbaijan Republic No. 500, dated 18 December 2020 about approval "The list of rehabilitation aids given to the persons with disabilities for the money of the state budget". Baku: Government of Azerbaijan; 2020 ( <a href="http://www.e-qanun.az/framework/46483">http://www.e-qanun.az/framework/46483</a> , accessed 3 July 2021).	GP	n/a	n/a					Various	×	×	×	×	×	×	×	×	×
	11	Brandt M, Trukenbrod C, Meigen C, Vogel M, Poulain T, Kiess W et al. Impaired visual acuity caused by uncorrected refractive errors and amblyopia in a German paediatric cohort. Ophthalmic Physiol Opt. 2021;41(1):42–52.	JA	QT	n = 1874	C	ENG	DB	V	Spectacles	✓	✓	✓	×	×	×	×	×	×
	10	Boot FH, MacLachlan M, Dinsmore J. Are there differences in factors influencing access and continued use of assistive products for people with intellectual disabilities living in group homes? Disabil Rehabil Assist Technol. 2019;15(2):173–82.	JA	QL	n = 30 (15 patients 15 AT providers)	A	ENG	DB	Various	Various	×	×	×	✓	×	×	✓	×	×



Country	ID	REFERENCE	RESULTS																			
			Type of publication*	Study design**	Sample size	Age groups included			Language	Identified via	Funct. domain ***	Specific assistive products discussed	Prevalence of need			% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability
AZE	13	Cabinet of Ministers of Azerbaijan Republic. Əlilliyi olan şəxslərin reabilitasiya vasitələri ilə təmin edilməsi Şərtləri və Qaydası”nın təsdiq edilməsi, Azərbaycan Respublikası Nazirlər Kabinetinin “Xüsusi nəqliyyat almaq üçün tibbi göstərişləri olan əlillərin avtomobil və motorlu araba ilə təmin edilməsi qaydaları haqqında” 1993-cü il 5 avqust tarixli 433 nömrəli Qərarında dəyişiklik edilməsi və “ikinci Dünya müharibəsi iştirakçılarının protez-ortopediya məmulatları, əlillərin, sağlamlıq imkanları məhdud uşaqların, fəvqəladə hallarda insanların xilas edilməsində və tibbi yardım göstərilməsində iştirak edərək ziyan çəkmiş vətəndaşların protez-ortopediya məmulatları, əli kreslo-veloarabaları, texniki və başqa reabilitasiya vasitələri ilə təmin edilməsi Qaydalarının təsdiq edilməsi haqqında” 2002-ci il 8 iyul tarixli 103 nömrəli Qərarının ləğv edilməsi barədə” Azərbaycan Respublikasının Nazirlər Kabinetinin 18 dekabr 2020-ci il tarixli 501 nömrəli Qərarı [“About approving terms and conditions of provision of persons with disabilities with rehabilitation aids terms and conditions”, amendments to previous order of the Cabinet of Ministers of Azerbaijan Republic No. 433 “About rules of provision of a car and engined wheelchair for disabled persons with medical indications to get special transport vehicle” dated 5 August 1993 and annulment of the previous order of the Cabinet of Ministers of Azerbaijan Republic No. 103 “About approval of terms of provision for Second World War participants of prosthetic and orthopedic products, disabled people, children with disabilities, injured participants of emergency rescue and medical assistance operations of prosthetic and orthopedic products, wheelchairs, technical and other rehabilitation aids” dated 8 July 2002]. Baku: Government of Azerbaijan; 2020 (http://www.e-qanun.az/framework/46499, accessed 3 July 2021).	GP	n/a	n/a	n/a	AZE	CL	H, V, M, SC, CM	Various	x	x	x	✓	✓	x	✓	✓	x	✓	✓	x



Country	ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Language	Identified via	Funct. domain ***	Specific assistive products discussed	RESULTS								
											Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability
UK	14	Campling NC, Pitts DG, Knight PV, Aspinall R. A qualitative analysis of the effectiveness of telehealthcare devices (ii) barriers to uptake of telehealthcare devices. BMC Health Serv Res. 2017;17(1):1–9.	JA	QL	n = 15 (focus groups); n = 27 (interviews)	OP (65+)	ENG	DB	n/a	Telehealth	x	x	x	✓	✓	x	x	x	x
GER, RUS	15	Chupina K. Constraints in access to assistive technologies – and communication – for hard-of-hearing people in the Russian Federation and in Germany. Disabil Stud Q. 2011;31(4).	JA	Mixed	n = 132 (survey); n = 30 (interviews)	A (18-35)	ENG	DB	H	Various	✓	x	x	✓	✓	✓	✓	✓	x
UK	16	Claesen E, Pryce H. An exploration of the perspectives of help-seekers prescribed hearing aids. Prim Health Care Res Dev. 2012;13(3):279–84.	JA	QL	n = 6	OP	ENG	DB	H	Hearing aids	x	x	x	x	x	✓	x	x	✓
ITA	17	Corradi F, Antonelli F. Progetto PCT – Percorso di counseling con tecnologia per persone con disabilità [PCT Project – Counselling path with technology for people with disabilities]. Rome: Leonarda Vaccari Institute; 2014.	RR (NGO)	QL	n = 73	All	ITA	CL	CM, CG	Various	✓	x	x	x	x	x	x	x	x
NLD	18	Creemers H, Beelen A, Grupstra H, Nollet F, Van den Berg LH. The provision of assistive devices and home adaptations to patients with ALS in the Netherlands: patients' perspectives. Amyotroph Lateral Scler Frontotemporal Degener. 2014;15(5–6):420–5.	JA	QT	n = 179	A	ENG	DB	M, SC, CM	Various assistive products and home adaptations	✓	✓	x	✓	x	x	x	x	x
UK	19	Creer S, Enderby P, Judge S, John A. Prevalence of people who could benefit from augmentative and alternative communication (AAC) in the United Kingdom: determining the need. Int J Lang Commun Disord. 2016;51(6):639–53.	JA	Mixed	n/a	n/a	ENG	DB	CM	n/a	✓	x	x	✓	x	x	x	x	x



Country		ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Language	Identified via	Funct. domain ***	Specific assistive products discussed	RESULTS								
												Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability
HRV	20	Izviješće o osobama s invaliditetom u Republici Hrvatskoj 2019. godine [Report on persons with disabilities in the Republic of Croatia 2019]. Zagreb: Croatian Institute for Public Health; 2019 ( <a href="http://www.hjz.hr/wp-content/uploads/2019/05/Osobe_s_invaliditetom_2019.pdf">http://www.hjz.hr/wp-content/uploads/2019/05/Osobe_s_invaliditetom_2019.pdf</a> , accessed 3 July 2021).	GP	QT	n/a	All	HRV	CL	n/a	n/a	n/a	✓	x	x	x	x	x	x	x	x
IRL	21	Cullen K, McAnaney D, Dolphin C, Delaney S, Stapleton P. Research on the provision of assistive technology in Ireland and other countries to support independent living across the life cycle. Dublin: Work Research Centre; 2012.	RR	QL	n/a	n/a	ENG	CL	All	Various	Various	x	x	x	✓	x	✓	✓	✓	x
IRL	22	Cullen K, Dolphin C, Wynne R. On behalf of the National Disability Authority. Assistive technology usage and unmet need amongst people with disabilities in Ireland: analysis of data from the National Disability Survey of 2006. Dublin: Work Research Centre; 2015 ( <a href="http://nda.ie/Publications/Disability-Supports/Assistive-Technology/Assistive-Technology-Usage-and-Unmet-Need-amongst-People-with-Disabilities-in-Ireland.html">http://nda.ie/Publications/Disability-Supports/Assistive-Technology/Assistive-Technology-Usage-and-Unmet-Need-amongst-People-with-Disabilities-in-Ireland.html</a> , accessed 3 July 2021).	RR	QT	n = 14 518	All	ENG	CL	H, V, M, CM, CG	Various	Various	✓	✓	✓	x	x	x	x	x	x
UK	23	Davis A, Smith P. Adult hearing screening: health policy issues –what happens next? Am J Audiol. 2013;22(1):167.	JA	QT	n = 1000	Op (60+)	ENG	DB	H	Hearing aids	Hearing aids	✓	✓	x	x	x	x	x	x	x
UK	24	Dawes P, Dickinson C, Emsley R, Bishop PN, Cruickshanks KJ, Edmondson-Jones M et al. Vision impairment and dual sensory problems in middle age. Ophthalmic Physiol Opt. 2014;34(4):479–88.	JA	QT	n = 499 365	A	ENG	DB	V	Spectacles and contact lenses	Spectacles and contact lenses	✓	✓	x	x	x	x	x	x	x
UK	25	Demain S, Burridge J, Ellis-Hill C, Hughes AM, Yardley L, Tedesco-Triccas L et al. Assistive technologies after stroke: self-management or funding for yourself? A focus group study. BMC Health Serv Res. 2013;13(1):1–12.	JA	QL	n = 15	A	ENG	DB	n/a	Various	Various	x	x	x	✓	✓	x	x	✓	x



Country	ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Language	Identified via	Funct. domain ***	Specific assistive products discussed	RESULTS								
											Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability
ESP	26	De-Rosende-Celeiro I, Torres G, Seoane-Bouzas M, Ávila A. Exploring the use of assistive products to promote functional independence in self-care activities in the bathroom. PLoS One. 2019;14(4):e0215002.	JA	QT	n = 193	OP	ENG	DB	SC	Assistive products for shower and toilet transfer	x	x	x	x	x	x	x	x	x
PRT	27	Direção Geral da Educação; Instituto do Emprego e Formação Profissional, I.P.; Instituto Nacional para a Reabilitação, I.P.; Instituto da Segurança Social, I.P.; Financiamento de produtos de apoio. Avaliação da execução física e financeira (Despacho Nº 7225/2015, de 11 de julho). Visão global sobre a atribuição de produtos de apoio – Relatório 2019 [Assistive products funding. Evaluation of physical and financial execution (Law No. 7225/2015, of July 11). Global view of the assistive products distribution – Report on the year 2019]. Lisbon: Instituto Nacional para a Reabilitação, I.P.; 2020 ( <a href="http://www.inr.pt/documents/11309/384880/Relat%C3%B3rio+de+Avalia%C3%A7%C3%A3o+F%C3%ADsica+e+Financeira+do+Financiamento+dos+Produtos+de+Apoio+2019/ae0031dd-c468-4089-b685-625b4bf942ba">http://www.inr.pt/documents/11309/384880/Relat%C3%B3rio+de+Avalia%C3%A7%C3%A3o+F%C3%ADsica+e+Financeira+do+Financiamento+dos+Produtos+de+Apoio+2019/ae0031dd-c468-4089-b685-625b4bf942ba</a> , accessed 3 July 2021).	GP	n/a	n/a		PRT	CL	All	Various	x	x	x	✓	✓	x	x	x	x
PRT	28	Disability and Human Rights Observatory. Implementation of the Convention on the Rights of Persons with Disabilities in Portugal. Submission to the Committee on the Rights of Persons with Disabilities of the responses to the list of issues by the Disability and Human Rights Observatory. Lisbon: Disability and Human Rights Observatory; 2016 ( <a href="http://tbinternet.ohchr.org/Treaties/CRPD/Shared%20Documents/PRT/INT_CRPD_CSS_PRT_23155_E.doc">http://tbinternet.ohchr.org/Treaties/CRPD/Shared%20Documents/PRT/INT_CRPD_CSS_PRT_23155_E.doc</a> , accessed 3 July 2021).	RR (NGO)	n/a	n/a	n/a	ENG	CL	n/a	n/a	x	x	x	✓	✓	x	x	x	x
UK	29	Donaldson LA, Karas M, O'Brien D, Woodhouse JM. Findings from an opt-in eye examination service in English special schools. Is vision screening effective for this population? PLoS One. 2019;14(3):e0212733.	JA	QT	n = 949	C	ENG	DB	V	Spectacles	✓	✓	✓	x	x	x	x	x	x

Country	ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Age groups included				RESULTS								
							Language	Identified via	Funct. domain ***	Specific assistive products discussed	Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability
SRB, HRV, MNE	30	Draffan EA, Banes D. on behalf of Global Symbols for UNICEF ECARO. Analysis of AAC interventions in Serbia, Croatia and Montenegro. New York: United Nations Children's Fund; 2020.	RR (NGO)	OT	n = 124	C	ENG	FR	CM	AAC	x	x	x	✓	x	x	x	x	✓
	31	Dupraz J, Andersen-Ranberg K, Fors S, Herr M, Herrmann FR, Wakui T et al. Use of healthcare services and assistive devices among centenarians: results of the cross-sectional, international 5-COOP study. BMJ Open. 2020;10(3):e034296.	JA	OT	n = 1253	OP (100+)	ENG	DB	Various	Various	✓	✓	x	x	x	x	x	x	x
MDA	32	Ebel J, Focsa T, Grigoras S, Haraz S, Negura P. Mapping of wheelchair provision and usage in Moldova. Chisinau: Government of the Republic of Moldova. 2020.	RR (NGO)	Review	n/a	All	ROM & ENG	CL & FR	M	Wheelchairs	x	✓	✓	✓	x	✓	x	x	x
UK	33	Elliott E, Newton J, Rewaj P, Gregory JM, Tomarelli L, Colville S, for the Care-Mind Consortium. An epidemiological profile of dysarthria incidence and assistive technology use in the living population of people with MND in Scotland. Amyotroph Lateral Scler Frontotemporal Degener. 2020;21(1-2):116–22.	JA	OT	n = 371	n/a	ENG	DB	CM	AAC	✓	✓	✓	x	x	x	x	x	x
IRL	34	Enable Ireland. Assistive technology for people with disabilities and older people: a discussion paper. Dublin: Enable Ireland Disability Federation of Ireland; 2016 ( <a href="http://www.enableireland.ie/sites/default/files/publication/AI%20Paper%20final%20version.pdf">http://www.enableireland.ie/sites/default/files/publication/AI%20Paper%20final%20version.pdf</a> , accessed 3 July 2021).	RR (NGO)	Mixed	n = 236 (survey)	n/a	ENG	FR	n/a	Various	x	x	x	✓	✓	x	✓	✓	x





RESULTS																			
Country	ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Specific assistive products discussed				Prevalence of need			F: Phys. accessibility			F: Fin. affordability		F: Acceptability
							Language	Identified via	Funct. domain ***	Specific assistive products discussed	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability		
UK	35	Enderby P, Judge S, Creer S, John A. Beyond the anecdote. Examining the need for and provision of, AAC in the United Kingdom. Sheffield: Communication Matters; 2013 ( <a href="http://eprints.whiterose.ac.uk/76406/1/2013_AAC_Evidence_Base_Beyond_the_Anecdote.pdf">http://eprints.whiterose.ac.uk/76406/1/2013_AAC_Evidence_Base_Beyond_the_Anecdote.pdf</a> , accessed 3 July 2021).	RR	Mixed	n/a	n/a	ENG	FR	CM	Various	✓	✓	x	✓	x	✓	x	x	
											✓	✓	x	✓	x	✓	x	x	
HUN, HRV, POL, BGR, LVA, ROM, DNK, FIN, NLD, ESP, GRC, ITA, UK, GER, FRA, AUT, NOR, SWE,	36	European Association of Service Providers for Persons with Disabilities. Barriers to the wider deployment of person centred technology in services for persons with disabilities. In: ASSIST – Assistive Technologies Foundation [website]. Budapest; ASSIST; 2018 ( <a href="http://en.assistfoundation.eu/projects/barriers-to-the-wider-deployment-of-person-centred-technology-in-services-for-persons-with-disabilities/">http://en.assistfoundation.eu/projects/barriers-to-the-wider-deployment-of-person-centred-technology-in-services-for-persons-with-disabilities/</a> , accessed 3 July 2021).	RR (NGO)	QT	n = 492	n/a	ENG	FR	H, V, M, CM, CG	Various	✓	✓	x	✓	x	✓	x	x	
											✓	✓	x	✓	x	✓	x	x	
UK	37	Finlayson J, Jackson A, Mantry D, Morrison J, Cooper SA. The provision of aids and adaptations, risk assessments and incident reporting and recording procedures in relation to injury prevention for adults with intellectual disabilities: cohort study. J Intellect Disabil Res. 2015;59(6):519–29.	JA	QL	n = 511	A (16+)	ENG	DB	various	Various	✓	✓	✓	x	x	x	x	x	
											✓	✓	✓	x	x	x	x	x	
CHE	38	Florio J, Arnet U, Gemperli A, Hinrichs T, for the SwiSCI Study Group. Need and use of assistive devices for personal mobility by individuals with spinal cord injury. J Spinal Cord Med. 2016;39(4):461–70.	JA	QT	n = 492	A (16+)	ENG	DB	M	Various	✓	✓	✓	x	x	x	x	x	
											✓	✓	✓	x	x	x	x	x	
POL	39	Frasuńska J, Tederko P, Wojdasiewicz P, Mycielski J, Turczyn P, Tarnacka B. Compliance with prescriptions for wheelchairs, walking aids, orthotics and pressure-relieving devices in patients with traumatic spinal cord injury. Eur J Phys Rehab Med. 2020;56(2):160–8.	JA	QT	n = 69	All	ENG	DB	M	Wheelchairs, walking aids, orthotics, seating AT	✓	✓	x	✓	✓	x	x	x	
											✓	✓	x	✓	✓	x	x	x	

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Country	ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Language	Identified via	Funct. domain ***	Specific assistive products discussed	RESULTS								
											Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability
TJK	45	Gayrat S, Karimov S, Khodjaeva A, Komilova Z, Kurbonov K, Marufov A et al. Assistive technology in Tajikistan: situational analysis. Copenhagen: WHO Regional Office for Europe; 2019 ( <a href="http://www.euro.who.int/en/publications/abstracts/assistive-technology-in-tajikistan-situational-analysis-2020">http://www.euro.who.int/en/publications/abstracts/assistive-technology-in-tajikistan-situational-analysis-2020</a> , accessed 3 July 2021).	RR (NGO)	Mixed	n = 200	n/a	ENG	FR	M	Various	x	x	x	✓	✓	x	✓	✓	x
RUS	46	Gorainova A, Pishnyak A, Khabirova E. The determinants of the development of Russian assistive technologies market: analysis of experts' interviews. The Qualitative Report. 2020;25(8):3019–44.	JA	QL	n = 12 (experts)	A	ENG	DB	All	Various	x	x	x	✓	✓	x	✓	✓	x
ARM	47	ԵՐԱԿԱՆՓՆՈՂԱԿԱՆ ՕԳՆՈՒԹՅԱՆ ՏՐԱՄԱՐԻՄԱՆ ԿԱՐԳԸ ԵՎ ՊԱՅՄԱՆՆԵՐԸ ՄԱՀՄԱՆԵԼՈՒ ՄԱՍԻՆ ՀՀ ԿԱՌԱՎԱՐՈՒԹՅԱՆ ՈՐՈՇՈՒՄ № 1035 (Government decree No. 1035 on setting procedure and conditions for rehabilitation assistance). Yerevan: Government of the Republic of Armenia; 2015 ( <a href="http://www.arlis.am/DocumentView.aspx?docid=100407">http://www.arlis.am/DocumentView.aspx?docid=100407</a> , accessed 3 July 2021).	GP	n/a	n/a	n/a	ARM	CL	H, Y, M, SC	Various	x	x	x	✓	✓	x	✓	✓	x
IRL	48	Gowran RJ, Clifford A, Gallagher A, McKee J, O'Regan B, McKay EA. Wheelchair and seating assistive technology provision: a gateway to freedom. Disabil Rehabil. 2020;8 June;1–12.	JA	Mixed	n = 8 (interviews) n = 273 (survey)	A	ENG	DB	M	Wheelchairs and seating AT	x	x	x	✓	✓	x	x	x	x
GER	49	Henschke C. Provision and financing of assistive technology devices in Germany: A bureaucratic odyssey? The case of amyotrophic lateral sclerosis and Duchenne muscular dystrophy. Health Policy. 2012;105(2-3):176–84.	JA	QL	n = 33	All	ENG	DB	Various	Various	x	x	x	✓	✓	x	✓	✓	x



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Country	ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Language			Identified via	Funct. domain ***	Specific assistive products discussed	Prevalence of need			% met needs	% unmet needs	B: Phys. accessibility			B: Fin. affordability			F: Phys. accessibility			F: Fin. affordability			F: Acceptability																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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CHE	50	Hertig-Godeschalk A, Gemperli A, Arnet U, Hinrichs T, on behalf of the SwissCI study group. Availability and need of home adaptations for personal mobility among individuals with spinal cord injury. J Spinal Cord Med. 2018;41(1):91–101.	JA	QT	n = 482	A (16+)	ENG	DB	M	Home adaptations	x	✓	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x



RESULTS																									
Country	ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Funct. domain ***			Prevalence of need			B: Phys. accessibility			B: Fin. affordability			F: Phys. accessibility			F: Fin. affordability			F: Acceptability
							Language	Identified via	CM	% met needs	% unmet needs	DB	ENG	AAC and communication aids	✓	✗	✗	✓	✗	✓	✗	✓	✗	✓	
UK	56	Judge S, Johnson V. Local service provision of augmentative and alternative communication and communication aids in England. Technol Disabil, 2017;29(3):121–8.	JA	QT	n = 220 services	n/a	ENG	DB	CM	AAC and communication aids	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	
TUR	57	Kayabaşoğlu G, Kaymaz R, Erkorkmaz Ü, Güven M. Study of hearing aid effectiveness and patient satisfaction. Kulak Burun Bogaz İhtis Derg, 2015;25(3):158–62.	JA	QT	n = 180	A and OP	ENG	DB	H	Hearing aids	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	
DNK, UK	58	Laplante-Lévesque A, Knudsen LV, Preminger JE, Jones L, Nielsen C, Öberg M et al. Hearing help-seeking and rehabilitation: perspectives of adults with hearing impairment. Internat J Audiol. 2012;51(2):93–102.	JA	QL	n = 34	A	ENG	DB	H	Hearing aids	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
SRB	59	Lažetić P, Venalainen R, Beočanin M. Feasibility study for assistive technology resource centers in the Republic of Serbia. Belgrade: Social Inclusion and Poverty Reduction Unit of the Government of Serbia; (n.d.).	RR	Mixed	n/a	n/a	ENG	FR	Various	Various	✗	✗	✗	✗	✓	✗	✗	✓	✗	✗	✗	✗	✗	✗	
UK	60	Leamon S, Hayden C, Lee H, Trudinger D, Appelbee E, Hurrell DL et al. Improving access to optometry services for people at risk of preventable sight loss: a qualitative study in five UK locations. J Public Health (Oxf). 2014;36(4):667–73.	JA	QL	n = 289	A (40-65)	ENG	DB	V	Spectacles	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	
SWE	61	Löfqvist C, Slaug B, Ekström H, Kylberg M, Haak M. Use, non-use and perceived unmet needs of assistive technology among Swedish people in the third age. Disabil Rehabil Assist Technol. 2016;11(3):195–201.	JA	Mixed	n = 371	OP	ENG	DB	M, SC, CM	Various	✗	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✓	

Country		REFERENCE		Type of publication*	Study design**	Sample size	Age groups included	Language	Identified via	Funct. domain ***	Specific assistive products discussed	RESULTS								
		ID										Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability
CYP	62	Mavrou K, Liasidou A, on behalf of the ANED network. European Semester 2018/2019 country fiche on disability. Utrecht: Human European Consultancy; 2019 ( <a href="http://www.disability-europe.net/downloads/934-country-report-on-the-european-semester-cyprus">http://www.disability-europe.net/downloads/934-country-report-on-the-european-semester-cyprus</a> , accessed 3 July 2021).	RR (Independent Authority)	Review	n/a	n/a	n/a	ENG	CL	n/a	n/a	x	x	x	✓	✓	x	x	x	x
CYP	63	Mavrou K, Liasidou A, on behalf of the ANED network. 2017-18 disability assessment – country report. Utrecht: Human European Consultancy; 2019 ( <a href="http://www.disability-europe.net/downloads/903-country-report-on-disability-assessment-cyprus">http://www.disability-europe.net/downloads/903-country-report-on-disability-assessment-cyprus</a> , accessed 3 July 2021).	RR (Independent Authority)	Review	n/a	n/a	n/a	ENG	CL	n/a	n/a	x	x	x	✓	✓	x	x	x	x
CYP	64	Mavrou K, Liasidou A, on behalf of the ANED network. ANED country report on social protection and Article 28. Utrecht: Human European Consultancy; 2017 ( <a href="http://www.disability-europe.net/downloads/726-country-report-on-social-protection-and-article-28-uncrpd-cyprus">http://www.disability-europe.net/downloads/726-country-report-on-social-protection-and-article-28-uncrpd-cyprus</a> , accessed 3 July 2021).	RR (Independent Authority)	Review	n/a	n/a	n/a	ENG	CL	n/a	n/a	x	x	x	✓	✓	x	x	x	x
AZE	65	McCabe C, on behalf of UNICEF Azerbaijan, Ministry of Labour and Social Protection of Azerbaijan Republic, UNICEF, UNDP, Open Society Foundations, Social Services Initiative, Heydar Aliyev Foundation. Situation assessment: people with disabilities in Azerbaijan. Baku: UNICEF Azerbaijan; 2011 ( <a href="http://www.undp.org/content/dam/azerbaijan/.../AZ_Disability_Report_Eng.pdf">http://www.undp.org/content/dam/azerbaijan/.../AZ_Disability_Report_Eng.pdf</a> , accessed 3 July 2021).	RR (NGO)	Mixed	n = 750	C & A	ENG	ENG	CL	n/a	n/a	x	x	x	✓	x	x	x	x	x



RESULTS																									
Country	ID	REFERENCE	REFERENCE				RESULTS																		
			Type of publication*	Study design**	Sample size	Age groups included	Language	Identified via	Funct. domain ***	Specific assisive products discussed															
UK	66	McCaughan D, Booth A, Jackson C, Lalor S, Ramdharry G, O'Connor RJ et al. Orthotic management of instability of the knee related to neuromuscular and central nervous system disorders: qualitative interview study of patient perspectives. <i>BMJ Open</i> . 2019;9(10):e029313.	JA	QL	n = 24	A	ENG	DB	M	Orthotic devices	Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability						
											x	x	x	✓	x	x	✓	x	x	x					
											x	x	x	✓	x	x	✓	x	x	✓					
UK	67	McNicholl A, Desmond D, Gallagher P. Assistive technologies, educational engagement and psychosocial outcomes among students with disabilities in higher education. <i>Disabil Rehabil Assist Technol</i> . 2020;15 December;1–9. doi:10.1080/17483107.2020.1854874.	JA	QT	n = 111	A (18+)	ENG	DB	Various	Various	Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability						
											x	✓	✓	x	x	x	✓	x	x	x					
											x	x	x	✓	x	x	✓	x	x	✓					
HUN	68	Menich N. Challenges in access to assistive technology in Hungary. In: Layton N, Borg J (eds.). <i>Global perspectives on assistive technology: proceedings of the GREAT Consultation 2019</i> . World Health Organization, Geneva, Switzerland, 22–23 August 2019, Vol. A. Geneva: World Health Organization; 2019 ( <a href="http://at2030.org/static/at2030_core/outputs/Global-Developments-in-Assistive-Technology-A11.pdf">http://at2030.org/static/at2030_core/outputs/Global-Developments-in-Assistive-Technology-A11.pdf</a> , accessed 3 July 2021).	CP	Mixed	n = 12 (user interviews); n = 8 (focus group); n = 13 (health care professional and service provider interviews)	A	ENG	DB	All	Various	Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability						
											x	x	x	✓	✓	x	x	x	✓	x	x				
											x	x	x	✓	✓	x	x	x	✓	x	x				
TKJ	69	Mishra S, DeMuth S, Sabharwal S, Watts HG, Lentz KKL, Huber M, World Health Organization. Disability and rehabilitation in Tajikistan: development of a multisectoral national programme to leave no one behind. <i>Publ Health Panorama</i> . 2018;4(02):202–9.	JA	Case	n/a	n/a	ENG	DB	n/a	n/a	Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability						
											x	x	x	✓	✓	x	x	x	✓	x	x	✓	x	x	x
											x	x	x	✓	✓	x	x	x	✓	x	x	✓	x	x	x
TKJ	70	Mishra S, Pupulin A, Ekman B, Khasnabis C, Allen M, Huber M. National priority assistive product list development in low resource countries: lessons learned from Tajikistan. <i>Disabil Rehabil Assist Technol</i> . 2020;2 April;1–8.	JA	Mixed	n = 200 (survey) n = 12 (focus groups)	n/a	ENG	DB	Various	n/a	Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability						
											✓	x	✓	✓	✓	x	x	✓	x	x	✓	x	x	x	
											x	x	x	✓	✓	x	x	✓	x	x	✓	x	x	x	
UK	71	Morrow E, Bowers R. Post-stroke ankle-foot orthoses: examining referral trends in the Scottish multi-disciplinary team. <i>Int J Health Plann Manage</i> . 2019;34(2):521–33. doi: 10.1002/hpm.2713.	JA	QT	n = 133 referring health care professionals	n/a	ENG	DB	M	Post-stroke ankle-foot orthoses	Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability						
											x	x	x	✓	✓	x	x	x	✓	x	x	✓	x	x	x
											x	x	x	✓	✓	x	x	x	✓	x	x	✓	x	x	x

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Country	ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Language	Identified via ***	Funct. domain ***	Specific assistive products discussed	Prevalence of need			F: Acceptability			F: Phys. accessibility			F: Fin. affordability			F: Acceptability																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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Country	ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Language	Identified via	Funct. domain ***	Specific assistive products discussed	Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability
SVN	78	Ocepek J, Prosic Z, Vidmar G. Assistive technology and its role among the elderly – a survey/Vloga medicinsko tehnicnih pripomočkov pri starostnikih-rezultati ankete. Inform Med Slov (Online). 2012;17(2):9.	JA	QT	n = 50	OP	ENG	DB	n/a	n/a	x	x	x	✓	x	x	x	x	x
ITA, GER, NOR, NLD, UK	79	Panteli D, Henschke C, Kroneman M, Fuchs S, Hjortland M, Oliva G et al. Assistive devices: regulation and coverage in five European countries (Rapid Review (No. 8)). Toronto: North American Observatory on Health Systems and Policies; 2018 ( <a href="http://hlpe.utoronto.ca/wp-content/uploads/2018/10/NAO-Rapid-Review-8_EN.pdf">http://hlpe.utoronto.ca/wp-content/uploads/2018/10/NAO-Rapid-Review-8_EN.pdf</a> , accessed 3 July 2021).	RR (NGO)	Review	n/a	n/a	ENG	FR	n/a	n/a	x	x	x	✓	✓	x	✓	✓	x
TKM	80	Rogers J, Rijicova S, Hearle C, on behalf of the Partnership for Every Child CEE/CIS consultancy group. UNICEF Turkmenistan survey and situation analysis of the boys and girls with disabilities in Turkmenistan – June-December 2014. Oxford: Oxford Policy Management and Partnership for Every Child CEE/CIS consultancy group; 2015 ( <a href="http://p4ec.ru/wp-content/uploads/2019/03/Report-Disability-Survey-FINAL.pdf">http://p4ec.ru/wp-content/uploads/2019/03/Report-Disability-Survey-FINAL.pdf</a> , accessed 3 July 2021).	RR (NGO)	QL	n/a	n/a	ENG	CL	H, M, CM	Wheelchairs, hearing aids	x	x	✓	✓	✓	x	✓	✓	x
NLD	81	Rapport meldactie hulpmiddelen. Ervaringen met keuze, aanvraag, levering en gebruik van hulpmiddelen [Report action assistive technology. Experiences with choice, request, delivery and use of assistive technology devices]. Utrecht: Patiëntenfederatie Nederland; 2019 ( <a href="http://www.patiëntenfederatie.nl/downloads/rapporten/155-rapport-meldactie-hulpmiddelen/file">http://www.patiëntenfederatie.nl/downloads/rapporten/155-rapport-meldactie-hulpmiddelen/file</a> , accessed 3 July 2021).	RR (NGO)	QT	n = 4155	n/a	NLD	CL	H, V, M, SC	Various	x	x	x	✓	✓	x	x	x	x
NOR	82	Pedersen H, Kermit PS, Söderström S. “You have to argue the right way”: user involvement in the service delivery process for assistive activity technology. Disabil Rehabil Assist Technol. 2020;20 March;1–11.	JA	QL	n = 44	A	ENG	DB	M	Wheelchairs, crutches, canes, prostheses	x	x	x	✓	x	x	✓	x	x



Country	ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Language	Identified via	Funct. domain ***	Specific assistive products discussed	RESULTS									
											Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability	
NLD	83	Pels EG, Aarmoutse EJ, Ramsey NF, Vansteensel MJ. Estimated prevalence of the target population for brain-computer interface neurotechnology in the Netherlands. <i>Neurorehabil Neural Repair</i> . 2017;31(7):677–85.	JA	QT	n = 9570 GPs	n/a	ENG	DB	CM	Any AT for communication	✓	x	✓	x	x	x	x	x	x	x
ITA	84	Pigini L, Andrich R. Assessing the outcome of individual assistive technology interventions. In: Desideri L, de Witte L, Chattat R, Hoogenwerf EJ (eds.). <i>Proceedings of the AAATE 2019 Conference – Global Challenges in Assistive Technology: Research, Policy &amp; Practice</i> (Bologna, Italy, 27–30 August 2019). Linz: AAATE; 2019 ( <a href="http://aaate2019.eu/wp-content/uploads/sites/24/2019/08/AAATE2019_Proceedings.pdf">http://aaate2019.eu/wp-content/uploads/sites/24/2019/08/AAATE2019_Proceedings.pdf</a> , accessed 3 July 2021).	CP	Mixed	n = 57	All	ENG	CL	M, SC, CM	Various	x	x	x	✓	✓	x	x	x	x	x
UK	85	Pilling RF, Outhwaite L. Are all children with visual impairment known to the eye clinic? <i>Br J Ophthalmol</i> . 2017;101(4):472–4.	JA	QT	n = 157	C (4-12)	ENG	DB	V	Spectacles	✓	✓	✓	x	x	x	x	x	x	x
CYP	86	Prodromos C. Έκθεση Επιτροπότη Διοικήσεως και Ανθρωπίνων Δικαιωμάτων αναφορικά με την καθυστέρηση που παρατηρήθηκε, εκ μέρους του Τμήματος Κοινωνικής Ενσωμάτωσης Ατόμων με Αναπηρίες, για παροχή οικονομικής βοήθειας για αγορά τεχνικών μέσων, στα πλαίσια του Σχεδίου Παροχής Οικονομικής Βοήθειας στα Άτομα με Αναπηρίες για την Προμήθεια Τεχνικών Μέσων, Οργάνων και άλλων Βοηθημάτων [Report of the Ombudsman as the mechanism for monitoring the procedures of forced returns of informal immigrants]. Nicosia: Ombudsman Office; 2013 ( <a href="http://www.ombudsman.gov.cy/ombudsman/ombudsman.nsf/All/F42B419A3FF0D2BCC225846C0039D525/\$file/F42B419A3FF0D2BCC225846C0039D525/\$file/152_2013_361_2013_06082013.doc">http://www.ombudsman.gov.cy/ombudsman/ombudsman.nsf/All/F42B419A3FF0D2BCC225846C0039D525/\$file/152_2013_361_2013_06082013.doc</a> , accessed 3 July 2021).	RF (Independent authority)	Case	n/a	C	GRC	CL	M	Wheelchairs and walking frame	x	x	x	✓	✓	x	x	x	x	x



RESULTS																			
Country	ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Language	Identified via	Funct. domain ***	Specific assistive products discussed	Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability
NOR	87	Ravneberg B. Usability and abandonment of assistive technology. J Assist Technol. 2012;6(4):259–69.	JA	QL	n = 12 (5 users, 7 service providers)	A (23-45)	ENG	DB	H	Signalling devices for alerts	x	x	x	✓	✓	✓	x	x	x
UK	88	Rolfe C, Gardner B. Experiences of hearing loss and views towards interventions to promote uptake of rehabilitation support among UK adults. Int J Audiol. 2016;55(11):666–73.	JA	QL	n = 22	OP	ENG	DB	H	Hearing aids	x	x	x	✓	x	✓	✓	x	✓
UK	89	Sansam K, O'Connor RJ, Neumann V, Bhakta B. Clinicians' perspectives on decision making in lower limb amputee rehabilitation. J Rehabil Med. 2014;46(5):447–53.	JA	QL	n = 23 health care professionals	n/a	ENG	DB	M	Lower-limb prostheses	x	x	x	✓	✓	x	✓	x	x
UK	90	Sawyer CS, Armitage CJ, Munro KJ, Singh G, Dawes PD. Biopsychosocial classification of hearing health seeking in adults aged over 50 years in England. Ear Hear. 2020;41(5):1215.	JA	QT	n = 9666	OP (50+)	ENG	DB	H	Hearing aids	✓	✓	x	x	x	x	x	x	x
UK	91	Shickle D, Griffin M. Why don't older adults in England go to have their eyes examined? Ophthalmic Physiol Opt. 2014;34(1):38–45.	JA	QL	n = 81	n/a	ENG	DB	V	Spectacles	x	x	x	x	✓	✓	✓	✓	x
UK	92	Shickle D, Griffin M, Evans R, Brown B, Haseeb A, Knight S et al. Why don't younger adults in England go to have their eyes examined? Ophthalmic Physiol Opt. 2014;34(1):30–37.	JA	QL	n = 37	A (18-35)	ENG	DB	V	Spectacles	✓	x	x	x	✓	✓	x	x	x
SWE	93	Socialstyrelsen. Hjälpmedel i kommuner och landsting. En nationell kartläggning av regler, avgifter tillgång och förskrivning [Assistive technology in municipalities and county councils. A national survey of regulations, fees, access and prescriptions]. Stockholm: Socialstyrelsen; 2016 ( <a href="http://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkatalog/ovrigt/2016-4-1.pdf">http://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkatalog/ovrigt/2016-4-1.pdf</a> , accessed 3 July 2021).	GP	Review	n/a	All	SWE	CL	All	Various	x	x	x	✓	✓	x	✓	x	x

RESULTS																			
Country	ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Language	Identified via	Funct. domain ***	Specific assistive products discussed	Prevalence of need	% met needs	% unmet needs	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability
EST	94	RFK-kasutamine meditsiinilises, sotsiaalses ja tööalases rehabilitatsioonis ning abivahendi vajaduse hindamisel, Pilotprojekt 2016–2020 [Implementation of ICF in medical, social and vocational rehabilitation and assistive technology assessment, pilot project 2016–2020]. Tallinn: Social Insurance Board; 2020 ( <a href="http://www.sotsiaalkindlustusamet.ee/sites/default/files/content-editors/Projektid/rfk_loppraport_april2020.pdf">http://www.sotsiaalkindlustusamet.ee/sites/default/files/content-editors/Projektid/rfk_loppraport_april2020.pdf</a> , accessed 3 July 2021).	RR (insurance)	Mixed	n = 40	A	EST	CL	M, SC	n/a	x	x	x	✓	x	x	✓	x	x
UK	95	Toufееq A, Oram AJ. School-entry vision screening in the United Kingdom: practical aspects and outcomes. <i>Ophthalmic Epidemiol.</i> 2014;21(4):210–6.	JA	QT	n = 3726	C	ENG	DB	V	Spectacles	✓	x	x	x	x	x	x	x	x
UK	96	Triccas LT, McLening B, Hendrie W, Peryer G. Is there a standard procedure for assessing and providing assistive devices for people with neuro-disabling conditions in United Kingdom? A nation-wide survey. <i>Disabil Health J.</i> 2019;12(1):93–7.	JA	QT	n = 231 health care professionals	n/a	ENG	DB	Various	n/a	x	x	x	✓	✓	x	x	x	x
FIN	97	Tuikka AM, Sachdeva N. Experiences from assistive technology services and their delivery in Finland. In: Kar A et al. (eds). <i>Digital nations – smart cities, innovation, and sustainability.</i> I3E 2017. Cham: Springer; 2017 ( <a href="http://doi.org/10.1007/978-3-319-68557-1_2">http://doi.org/10.1007/978-3-319-68557-1_2</a> , accessed 3 July 2021).	JA	QL	n = 10	n/a	ENG	DB	All	Various	x	x	x	✓	x	x	x	x	x
SWE	98	Turunen-Taheri S, Carlsson PI, Johnson AC, Heiström S. Severe-to-profound hearing impairment: demographic data, gender differences and benefits of audiological rehabilitation. <i>Disabil Rehabil.</i> 2019;41(23):2766–74.	JA	QT	n = 4286	A (19+)	ENG	DB	H	Hearing aids	✓	✓	x	x	x	x	x	x	x



Country	ID	REFERENCE	Type of publication*	Study design**	Sample size	Age groups included	Language	Identified via	Funct. domain ***	Specific assistive products discussed	RESULTS								
											Prevalence of need	✓	✗	B: Phys. accessibility	B: Fin. affordability	B: Acceptability	F: Phys. accessibility	F: Fin. affordability	F: Acceptability
NLD	103	Zorginstituut Nederland. GIP databank hulpmiddelen [GIP database assistive technology] [online database]. Diemen: Zorginstituut Nederland; 2019 ( <a href="http://www.gipdatabank.nl">http://www.gipdatabank.nl</a> , accessed 3 July 2021).	GP	QT	n = 16 million	All	NLD	CL	All	n/a	✗	✓	✗	✗	✗	✗	✗	✗	✗

\* Type of publication: JA = journal article; CP = conference proceedings; RR = research report; NGO = nongovernmental organization; GP = government report. \*\* Study design: QT = quantitative; QL = qualitative. Age groups included: C = children; A = adults; OP = older people. Identified via: DB = database search; CL = checklist; FR = forwarded resource from national experts. \*\*\* Functional domain: H = hearing; V = vision; M = mobility; SC = self-care; CM = communication; CG = cognition. Results: B = barriers; F = facilitators; ✓ = mentioned by publication; ✗ = not mentioned by publication.





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REGIONAL OFFICE FOR **Europe**

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