

SR Protocol

Title: Estimating need and coverage for five priority assistive products: A systematic review of global population-based research

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Abbreviated Research Protocol

Objectives:

To contribute to a global effort to increase the AT evidence base, we are conducting a systematic review of studies that generate population-based data on AP access indicators for five priority APs (hearing aids, wheelchairs, prosthetics, glasses, or personal digital assistants). This review aims to (1) characterize existing population-level research producing estimates of AP access indicators for the five APs and (2) present and synthesise global data on AP access indicators to support scaling up AT provision.

This review builds on the findings of an initial scoping review, commissioned by the WHO and published separately (Danemayer et al, 2021 (pending publication)) which primarily focused on methods used for estimating AP supply and demand at market-level.

Inclusion/exclusion criteria:

Our search includes studies published between 2000-2020, written in English, French, Portuguese, or Spanish, or providing a translation in any of these languages. Studies are eligible for inclusion if they met the following criteria during full text review:

- At least a portion of study data was collected since January 1, 2000; and
- The study generated at least one AP access indicator (defined in data extraction tables) for one of the five specified priority Aps (glasses, wheelchairs, prosthetics, hearing aids, and personal digital assistants), and;
- The study was a primary or secondary analysis of a representative, population-based sample.

Databases searched:

	Database(s)
Ovid	MEDLINE, EMBASE, AMED, Global Health, PSYCHInfo
Global Index Medicus	African Index Medicus, Latin American and Caribbean Health Sciences Literature, Index Medicus Eastern Mediterranean Region, Index Medicus South East Asia Region, Western Pacific Region Index Medicus
	CINAHL Plus
	Cochrane Database of Systematic Reviews
	Science Direct
	OpenGrey

	Grey Literature Report
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Search strategy:

	Parameter
	((assistive OR accessible Or inclusive Or adaptive OR self?help) AND (tech* OR product\$ OR device\$ OR software))
OR	(aid OR wheelchair\$ OR hearing?aid OR prosth* OR glasses OR spectacle\$ OR eyeglasses OR PDA\$ OR "personal digital assistant")
AND	(coverage OR unmet OR under?met OR need OR prevalence OR distribution OR provision or suppl* OR demand)
AND	(impair* OR disab* OR functi* limit* OR limit* functi* OR correct* OR uncorrect*)
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Data extraction:

Topic	Details
Publication	Authors, year of publication
Setting	Data collection dates, geography (to the smallest scale provided), WHO region
Population	N included, age range
Methodology	Study design, sampling frame, sampling strategy
Assessment	Assessment approach(es), survey/tool/dataset name (if applicable), APs included, definition(s)/threshold(s) for functional difficulty
Results	AP indicator definition provided in text, corresponding AP indicator definition in review, AP indicator value (numerator, denominator, proportion, confidence intervals, weighted), other variables stratified
Risk of Bias	Overall Joanna Briggs Institute (JBI) Score, checklist items missed

Data on AP indicators are included if 1) they are directly reported in the results of studies where they aligned with our terms and definitions (see table below with indicator definitions and equations) or 2) they were indirectly reported, i.e. it was possible to calculate them using clearly defined data provided in the articles.

AP Access Indicator	Working Definition	Equation (if applicable)
Need	The proportion of a defined population who could benefit from using an appropriate AP, based on an AP assessment approach, including those already using the AP.	Population who could benefit from an AP / Defined population

Has AP	The proportion of a defined population who have an AP (obtained through purchase, loan, rent, donation, or by other means).	Population who have APs / Defined population
Use	The proportion of a defined population who use an AP.	Population who use APs / Defined population
Met need (population with full coverage)	The proportion of a population who need and use appropriate APs.	Population who need and use appropriate APs / Defined population
Under-met need (population with partial coverage)	The proportion of a population who need and use APs that are insufficient to maximize functioning.	Population who use insufficient APs / Defined population
Unmet need (population with no coverage)	The proportion of a population who need and do not use any APs.	Population who need and do not use appropriate APs / Defined population
Coverage	The proportion of a defined population who need and use an AP.	Population who need and use APs / Population who need APs

The following example is provided to illustrate indirect reporting and extraction: A study reports glasses coverage as 30%, because 30 of 100 total participants reported using glasses. By our definition, this would actually be an indicator of 'use', which is how we would extract and report it. However, if the study further specifies that of these 30, 20 had 'normal vision' when using their glasses and 10 had an outdated prescription, and of the 70 without glasses, 25 would benefit from having them prescribed, these data would indirectly inform other AP indicators. Using our terms and definitions out of the total population, we can therefore extract and report the met need for this study at 20%, the under-met need at 10%, and the unmet need at 25%. This demonstrates a total need of 55% and allows the calculation of coverage by our definition as met need (20) divided by total need (55), or 36.4%.

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Time-frame:

	Jan-March 2020	April-June 2020	July-September 2020	October-December 2020
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Develop protocol & search terms; conduct database search; search NGO sites				
Design data repository for data extraction				
Remove duplicates; screen abstracts; cross-reference systematic reviews				
Extract data from included abstracts				
Draft scoping review				
Review full-texts				
Extract data from full-texts				
	Jan-March 2021	April-June 2021	July-September 2021	October-December 2021
Finalise & submit scoping review				
Double-check full-text data				
Draft systematic review				
Finalise & submit systematic review				
Launch data repository minimum viable product				