



Refractive error evidence gap map brief | November 2022

Refractive error occurs when the shape or length of the eye prevents light from focusing directly on the retina. This makes it difficult for the eye to focus images clearly, and vision can become blurred and impaired.

There are four types of refractive errors:

1. Near-sightedness (myopia), which makes faraway objects look blurry
2. Far-sightedness (hyperopia), which makes nearby objects look blurry
3. Astigmatism, which makes far away and nearby objects look blurry or distorted
4. Presbyopia, which makes it hard for middle-aged and older people to see things up close

Correcting a refractive error with an eye examination and spectacles is a simple, cost-effective and high-impact intervention. But despite this, the unmet need for refractive error correction remains significant, particularly in resource-poor settings. Evidence shows that 49% of all visual impairment is caused by unaddressed refractive error, 800 million people across the world have unaddressed refractive errors and 1.8 billion people have an age-related near-vision impairment¹.

¹ <https://www.sightsavers.org/protecting-sight/what-is-refractive-error/>

At Sightsavers, our research into eye health includes exploring what opportunities there are for the scale-up of high-quality and sustainable refractive error services, as well as identifying innovative approaches to strengthen eye care services in the context of broader health and education systems.

Evidence gap maps (EGMs) bring together systematic or literature reviews, a type of desk-based research study done to identify, appraise and synthesise the evidence on a specific topic. When they are done well, these reviews are useful because they identify gaps in knowledge and can inform best practice guidance in a specific area. EGMs provide easy access to these reviews, their methodological quality and the strength of their conclusions.

This brief presents the findings of our refractive error EGM as of November 2022.

What is included in the refractive error EGM

- Sightsavers' refractive error EGM includes 188 reviews on five thematic areas: burden of disease, biomedical research, service delivery, health systems, and impact and economic evaluation.
- To reflect the breadth of synthesis work on refractive error, the EGM includes reviews focusing on different conditions including presbyopia, myopia, astigmatism, low vision and amblyopia, with the understanding that these conditions often have different causes and treatment solutions.
- 34% of reviews related to high, middle and low-income settings, 22% do not report the geographical region of included studies and 11% reviews exclusively include studies from low and middle-income countries. In reading these reviews, it is important to consider if there are factors that make the results only applicable to a specific geographic setting or if they are generalisable.

Key messages

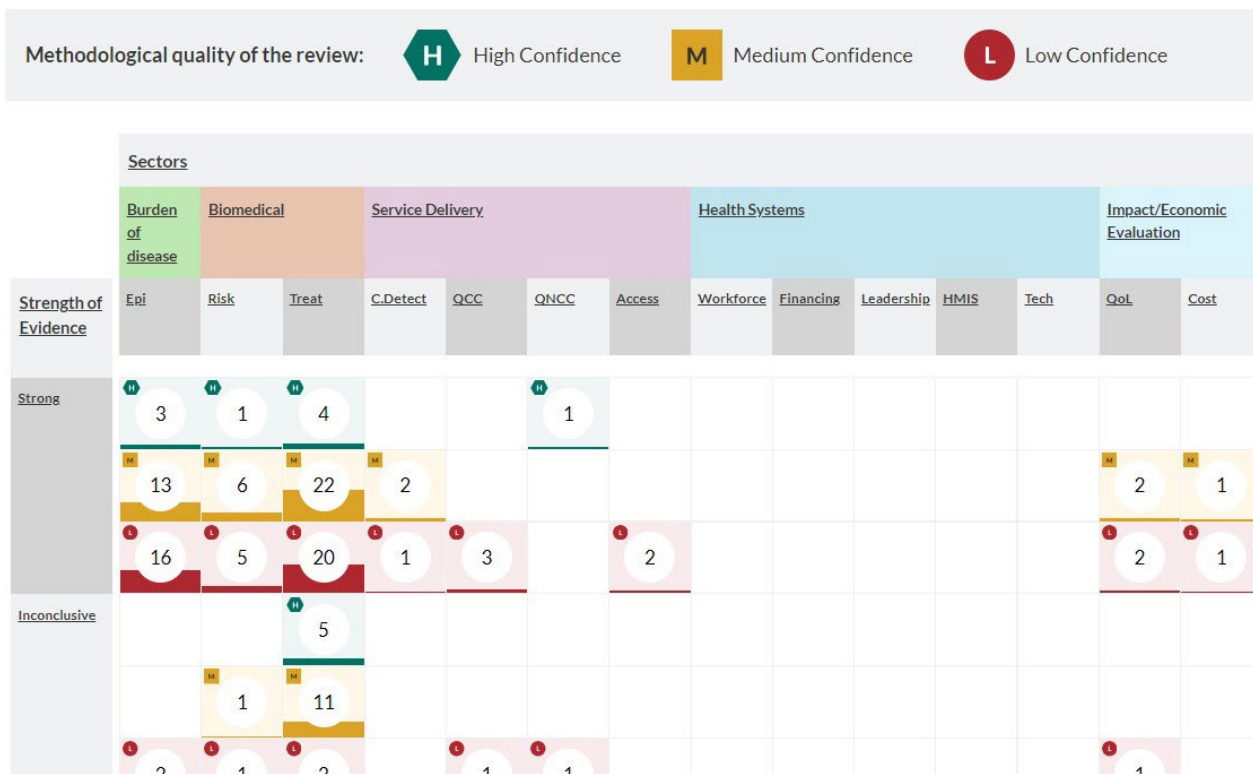
- No reviews about health systems were identified, which is an important gap in evidence synthesis as we work towards the goals of universal health coverage and health systems strengthening.
- Out of 188 reviews, 103 reached a conclusive answer to the research question. However, we can only be confident in the findings of eight reviews, given that the majority of reviews are either medium (46) or low quality (46).
- The quality of the methodological approach in the available reviews is inconsistent. Out of 188 reviews included in the EGM, only 24 are deemed to be of high methodological standard. Given the importance of synthesis work for policy influencing and decision-making, this is an important point to consider. For example:
 - The bulk of the reviews are on biomedical research (treatment/risk and prevention) with 114 studies, however, only 16 of these are of high quality.
 - Out of 53 reviews reporting the burden of disease, only two studies with high-quality standard and most studies in this category are of low methodological standard (31) report strong conclusions in response to their research question.

- The two reviews addressing access to refractive error services found strong findings in response to their research question, however, findings should be analysed with caution due to their low methodological quality standard.
- A greater focus on equity is needed. Further research to determine the prevalence of refractive error and access to services in different population groups is needed. None of the reviews focus on gender equity.
- High-quality evidence is needed on the impact of unaddressed refractive error on academic achievements and learning outcomes as we promote collaboration between health and education systems and work towards the SDG 4: inclusive and equitable quality education for all.

Reflections on the update of the refractive error EGM

- A total of 97 were added to the EGM in the 2022 update.
- Between 2020 and 2022 there was an increase of 58 reviews reporting strong evidence in response to their research question
- In terms of methodological standard, an increase was observed in the number of reviews of medium confidence from 34 in 2020 to 78 in the 2022 update

An increase was observed in the number of reviews reporting findings from high, medium and low-income countries, from 39 in 2020 to 64 in 2022.



Sightsavers' refractive error gap map: <https://research.sightsavers.org/evidence-gap-maps/refractive-error-gap-map/>

How to read the refractive error gap map

Research evidence from systematic or literature reviews is displayed in a matrix. The columns show the thematic areas that are relevant to the theme of refractive error, labelled as sectors and sub-sectors. The rows show the strength of the evidence in each review: strong, inconclusive or weak. If the authors of a particular review were able to reach a conclusive answer to their research question using the evidence available, the evidence is classed as strong. If they were unable to reach a conclusive answer due to insufficient evidence, the evidence is classed as weak. If the outcome was somewhere in between, the evidence is classed as inconclusive.

The numbers displayed in each box indicate the number of systematic or literature reviews. The reviews are split by confidence level, which is an indicator of the methodological quality of the reviews themselves. We have rated the methodological confidence in each review as strong (green hexagon), medium (yellow square) or low (red circle).

On the research centre, by clicking on one of the hyperlinks, you will be taken to a separate webpage to read a summary of that individual review.

About this brief

The refractive error gap map and this brief were produced by Bhavisha Virendrakumar, research associate for evidence synthesis at Sightsavers.

Suggested reference for the gap map: Sightsavers (2022).

Refractive error evidence gap map. [online] available at:

<https://research.sightsavers.org/evidence-gapmaps/refractive-error-gap-map/> [add date accessed].

Please address questions/comments about this brief to RUL@sightsavers.org.