

Community Eye Health Journal

VOLUME 35 • NUMBER 117 • 2022

Don't miss out
Download the free
Community Eye Health
Journal app today!
bit.ly/CEHJ-app



SCAN ME



A research coordinator collecting data from a health extension worker. ETHIOPIA

© NATNAEL KOKEB CC BY-NC-SA 4.0

Why does research matter?

A working knowledge of research – both how it is done, and how it can be used – is important for everyone involved in direct patient care and the planning & delivery of eye programmes.



Victor H Hu
Assistant Clinical Professor:
International Centre for Eye Health, London School of Hygiene & Tropical Medicine and Consultant Ophthalmologist: Mid Cheshire NHS Hospitals, UK.

The mention of 'research' can be off-putting and may seem irrelevant in the busy environment of a clinic or hospital. However, research is central to all aspects of eye care delivery – both inside and outside the clinic.

Whether we are health workers, public health practitioners, managers, policy makers, or editors – all of us 'stand on the shoulders of giants': we rely on the research done by others before us. This can be as simple – and profound – as hand washing between patients; a habit that only became common practice in the 1870s, following the work of the Hungarian physician Ignaz Semmelweis and Scottish surgeon Joseph Lister. Or it can be as complex as making a diagnosis of glaucoma and knowing what treatment to give. All current eye care practice is based on research. Clinical, operational (eye care delivery) and public health practice will continue to be profoundly shaped by new research developments.

What is research?

In its simplest form, research is about investigating the world around us to increase our knowledge, so we can work out how to do things better.

In health care, we use a scientific approach to carry out research; there is a set way of doing things that ensures research is done in a logical way, and that results are published widely, so that other people can scrutinise what has been done. This gives us confidence that the results will be useful in everyday practice.

It is important to critically evaluate research and research findings, including checking that research has been carried out in the proper way, and whether the conclusions that have been made are reasonable and justified. One of the ways in which the scientific community ensures the quality of research is through the process of peer review.



About this issue

The mention of 'research' can be off-putting and may seem irrelevant in the busy environment of a clinic or hospital. However, research is central to all aspects of eye care delivery, both inside and outside the clinic. A working knowledge of research – both how it is done, and how it can be used – is important for everyone involved in direct patient care and the planning & delivery of eye programmes. We hope this issue will inspire you to learn more and perhaps even get involved.

Contents

- 1 Why does research matter?**
Victor H Hu
- 5 Planning good research: what is needed?**
Clare Gilbert and GVS Murthy
- 7 Using research findings in my everyday practice: what is good evidence, where do I look, and how can I use it?**
Victor H Hu, Jagadesh C Reddy, Dhivya Rauniya and Elmien Wolvaardt
- 9 How the World Health Organization developed the Guide for Action**
Andreas S Mueller, Alarcos Cieza and Stuart Keel
- 10 Small-scale eye care research: why and how to do it**
Esmael Habtamu, Priya Morjaria and Suzanne Gilbert
- 13 Eye health: what research is needed, and where?**
Jacqueline Ramke and Elena Schmidt
- 14 Optic neuropathies that mimic glaucoma**
Michelle Dinsdale, José Manuel Guajardo-Beroiza, Jibrán Mohamed-Noriega and Neeru Amrita Vallabh

Before research papers are accepted for publication in a scientific journal, they are reviewed by other researchers (peer reviewed) to check the quality of the research and the validity of the results and conclusions. Even so, the quality of published research can vary.

This is why systematic reviews and meta-analyses are so valuable: they answer important questions by identifying, evaluating, and summarising good quality evidence from a range of published research papers. Often, systematic reviews conclude that there is not enough evidence to answer a question with absolute certainty, or to produce an answer that will be applicable in different countries or health care settings. This is useful, as it gives researchers

Types of health research

Basic science research, such as in molecular genetics or cell biology, fills the gaps in our understanding of disease mechanisms (pathogenesis).

Clinical research addresses how diseases in individuals can present and be diagnosed, and how a condition progresses and can be managed.

Epidemiological research, which is at the population level (as opposed to the individual level), answers questions about the number of people in the population who have a condition, what factors (called exposures) are causing the condition, and how it can be treated or prevented at the population level.

Going beyond epidemiology, there is also **operational and health systems research**, which focuses on how best to deliver health interventions, clinical and rehabilitation services, or behaviour change initiatives.

Other types of research, which are also important for public health, include health economics, social science, and statistical modelling.

Finally, **systematic literature reviews** can be very useful, as they identify and summarise the available evidence on a specific topic.

By Clare Gilbert and GVS Murthy

Community Eye Health Journal
VOLUME 35 • NUMBER 117 • 2022



INTERNATIONAL CENTRE FOR EYE HEALTH



Editor-in-Chief
Elmien Wolvaardt
editor@cehjournal.org

Editor: South Asia Edition
Kriti Shukla

Medical Editor
Victor Hu

Consulting Editor: issue 117
Victor Hu

Editorial Administrator
Anita Shah
admin@cehjournal.org

Online and social media
Astrid Leck
Hugh Bassett
Romulo Fabunan

Editorial Committee
Simon Arunga (Uganda)
João M Furtado (Brazil)
Clare Gilbert (UK)

Esmael Habtamu (Ethiopia)
Fatima Kyari (Nigeria)
Ciku Mathenge (Rwanda)
Nyawira Mwangi (Kenya)
GVS Murthy (India)
Heiko Philippin (Germany)
Thulsiraj Ravilla (India)
Serge Resnikoff (Geneva)
Jude Stern (Australia)
Sumrana Yasmin (Pakistan)
David Yorston (UK)

Editorial Advisors
Nick Astbury (Partnerships)
John Buchan (Ophthalmology)
Jenny Evans (Systematic reviews)
Michelle Hennessey (Ophthalmic nursing)
Islay Mactaggart (Disability)
Priya Marjoria (Optometry)
Daksha Patel (Education)

Regional Consultants
Hannah Faal (AFR)
Kovin Naidoo (AFR)
Van Lansingh (AMR)
Andrea Zin (AMR)
Ian Murdoch (EUR)
Janos Nemeth (EUR)
GVS Murthy (SEAR)
R Thulsiraj (SEAR)
Babar Qureshi (EMR)
Mansur Rabiou (EMR)
Leshan Tan (WPR)
Hugh Taylor (WPR)

Design
Lance Bellers

Printing
Newman Thomson

Proofreading
Astrid Leck
Anita Shah

Download our app

Download the free *Community Eye Health Journal* app today:
bit.ly/CEHJ-app

Visit us online
www.cehjournal.org

Subscribe
Visit: www.cehjournal.org/subscribe
Email: web@cehjournal.org
Readers in low- and middle-income countries receive print copies free of charge. To subscribe, send your name, occupation, and postal address to:

Anita Shah, International Centre for Eye Health, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK.

Email: admin@cehjournal.org

guidance about where more research is needed (see article on page 13).

But this can be a challenge for clinicians – how can we make good decisions in the absence of definitive evidence? Clinical experience is very important, but where possible this should be informed by good research – see page 6 for practical tips.

Health care practitioners and managers can also use guidance from professional bodies such as the World Health Organization. The article on page 8 explains the process by which guidelines are developed and shows why we can rely on them.

In conclusion, research is fundamental to the everyday practice of health care professionals, including eye care workers. Research allows us to find out new things and to provide better care for patients. There are many different types of research that can be carried out and these can vary enormously. It is important to ask the right question, as this will determine the type of research that is done (see page 5).

All of us can participate in research: it starts with asking questions and then going to find out the answers. The article on page 10 offers practical suggestions for carrying out small-scale research that is relevant and useful to eye care.

Examples of research questions and how they have been answered

Can povidone iodine prevent endophthalmitis?

In many eye departments, cataract surgery is a frequently preformed operation. One of the most serious complications is infection within the eye (endophthalmitis) which can lead to loss of vision. Several well conducted randomised controlled clinical trials have shown that instilling 0.5% aqueous povidone iodine eye drops, an antiseptic agent, before surgery reduces the risk of this devastating infection, with the first trial undertaken in 1991.¹

What is the best treatment for primary open-angle glaucoma?

Chronic glaucoma can be a very difficult condition to manage, particularly when patients often only present to eye departments once they have already had significant vision loss. Eye drops which lower intraocular pressure are often prescribed; however, patients may not use the eyedrops because they are expensive, can be difficult to instil, and do not improve their vision. Surgery is an option, but patients can be reluctant to undergo surgery on their only good eye, and there can be postoperative complications. Laser

treatment is another option. In a recent study in Tanzania, patients were randomly allocated to Timolol 0.5% eye drops or a form of laser called Selective Laser Trabeculoplasty (SLT).² After one year, SLT was found to be superior to drops for high-pressure glaucoma.

Why don't older adults in England have their eyes examined?

Focus group discussions among older adults in England revealed that, despite most participants being eligible for state-funded check-ups, wearing spectacles was associated with the appearance of being frail. They were also afraid of appearing to 'fail' tests, and had concerns about the cost of spectacles.³

How cost effective is a diabetic retinopathy screening programme?

An economic evaluation in South Africa compared alternative interventions. Screening using non-mydriatic retinal photographs taken by a technician supervised by an ophthalmic nurse and read by a general medical officer was cost-effective and the savings made allowed the government to fund disability grants for people who went blind.⁴

Acknowledgements

Stephen Gichuhi and Nyawira Mwangi contributed to preliminary work on this article.

References

- 1 Speaker MG, Menikoff JA. Prophylaxis of endophthalmitis with topical povidone-iodine. *Ophthalmology*. 1991;98(12):1769-75.
- 2 Philippin H, Matayan E, Knoll KM, Macha E, Mbishi S, Makupa A, et al. Selective laser trabeculoplasty versus 0.5% timolol eye drops for the treatment of glaucoma in Tanzania: a randomised controlled trial. *Lancet Glob Health*. 2021;9(11):e1589-e99.
- 3 Shickle D, Griffin M. Why don't older adults in England go to have their eyes examined? *Ophthalmic & physiological optics: the journal of the British College of Ophthalmic Opticians (Optometrists)*. 2014;34(1):38-45.
- 4 Khan T, Bertram MY, Jina R, Mash B, Levitt N, Hofman K. Preventing diabetes blindness: cost effectiveness of a screening programme using digital non-mydriatic fundus photography for diabetic retinopathy in a primary health care setting in South Africa. *Diabetes Res Clin Pract*. 2013;101(2):170-6.

Support our work

We rely on subscriptions and donations from charities and generous individuals to carry out our work.

To support us, visit:

www.cehjournal.org/donate

or contact Anita Shah:

admin@cehjournal.org

Published by the International Centre for Eye Health, London School of Hygiene & Tropical Medicine.

Unless otherwise stated, authors share copyright for articles with the *Community Eye Health Journal*. Illustrators and photographers retain copyright for images published in the journal.

Please note that some articles are published online first and may have been shortened to fit the available space in this printed edition.

Unless otherwise stated, journal content is licensed under a Creative Commons Attribution-NonCommercial (CC BY-NC) license which permits unrestricted use, distribution,

and reproduction in any medium for non-commercial purposes, provided that the copyright holders are acknowledged.

ISSN 0953-6833.

Disclaimer

Signed articles are the responsibility of the named authors alone and do not necessarily reflect the views of the London School of Hygiene & Tropical Medicine (the School). Although every effort is made to ensure accuracy, the School does not warrant that the information contained in this publication is complete and correct and shall not be liable for any damages incurred as a result of its use.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the School in preference to others of a similar nature that are not mentioned. The School does not endorse or recommend products or services for which you may view advertisements in this Journal.

The *Community Eye Health Journal* is supported by:





Allen Foster
Professor of International Eye Health: International Eye Health Centre, London School of Hygiene & Tropical Medicine, London, UK.

Case study: Clinical research

While working as an ophthalmologist in a hospital in Tanzania in the 1980s, I became interested in why so many children were blind due to corneal scarring. Keratomalacia (drying and clouding of the cornea) due to vitamin A deficiency had been reported in Asia, but Bitot's spots – normally associated with keratomalacia – were rarely seen in African children. The children's parents often said the eye problems and blindness was due to measles. In addition, herpes simplex keratitis had been reported as a cause of corneal ulceration after measles in Nigeria.

By good fortune, I met Prof Al Sommer, who was working on vitamin A deficiency in Indonesia and Nepal. With his advice and encouragement, we started a prospective study to investigate and photograph all cases of corneal ulceration in children who came to the hospital where I was working. Over three years, we documented 130 cases of corneal ulceration in children and found that, although herpes simplex virus was the commonest cause of ulceration overall, vitamin A deficiency was the major cause of bilateral ulceration, subsequent blindness, and mortality in this series of patients.

As so often happens, our research led to more questions and further studies, including one which



Giving vitamin A to a child. **TANZANIA**

showed that vitamin A supplementation reduced mortality in children hospitalised with measles. This work contributed to the evidence that led WHO and UNICEF in 1997 to announce a programme of vitamin A supplementation for children with measles.

What did I learn from this initial research experience?

- 1 Identify a clear research question
- 2 Take time to plan the study
- 3 Work with colleagues who have other expertise.

Further reading

Foster A, Sommer A. Corneal Ulceration in Tanzanian Children. *Br J Ophthalmol*. 1987;71:331-43.

Barclay AW, Foster A, Sommer A. Vitamin A Supplements and Mortality Related to Measles. *Randomised Clinical Trial*. *Br Medical J*. 1987;294(6567):294-6.



Ian McCormick
Research Fellow: International Centre for eye Health, London School of Hygiene and Tropical Medicine, London, UK.

The rapid assessment of avoidable blindness (RAAB) survey methodology

Rapid assessment of avoidable blindness (RAAB) is a population-based survey methodology that is designed to provide a simple and affordable – yet reliable – estimate of the prevalence and causes of vision impairment and blindness among people aged 50 years and older in a defined population.¹

The locally relevant data that RAAB surveys provide are used by governments and non-governmental eye health service providers to support evidence-based eye care planning, eye service monitoring and evaluation. RAAB is therefore an important tool in achieving the global eye health priorities set out by the World Health Organization's World Report on Vision and the Lancet Global Health Commission on Global Eye Health.^{2,3}

RAAB surveys provide the majority of the data used to estimate the global and regional prevalence and causes of vision impairment, as well as data which are vital for tracking progress towards eye health within universal health coverage, such as effective cataract surgical coverage and effective refractive error coverage.^{4,5}

The RAAB repository (www.raab.world) collates RAAB survey results and datasets and makes them available for secondary analyses; data from 118 of the 330 RAABs carried out since 2000 have been made available for this purpose. We encourage more RAAB survey principal investigators and data owners to share their data via the repository, so that the global eye health community collectively can have a more comprehensive and powerful evidence base for research and advocacy.



Visual acuity testing during a RAAB survey. **MEXICO**

References

- 1 Mactaggart I, Limburg H, Bastawrous A, et al. Rapid Assessment of Avoidable Blindness: looking back, looking forward. *Br J Ophthalmol*. 2019; 103: 1549-1552. 2019/07/04. DOI: 10.1136/bjophthalmol-2019-314015.
- 2 World Health Organization. World report on vision. 2019. Geneva.
- 3 Burton MJ, Ramke J, Marques AP, et al. The Lancet Global Health Commission on Global Eye Health: vision beyond 2020. *Lancet Glob Health*. 2021; 9: e489-e551. DOI: 10.1016/S2214-109X(20)30488-5.
- 4 Bourne R, Steinmetz JD, Flaxman S, et al. Trends in prevalence of blindness and distance and near vision impairment over 30 years: an analysis for the Global Burden of Disease Study. *Lancet Glob Health*. 2021; 9: e130-e143. DOI: 10.1016/S2214-109X(20)30425-3.
- 5 Steinmetz JD, Bourne RRA, Briant PS, et al. Causes of blindness and vision impairment in 2020 and trends over 30 years, and prevalence of avoidable blindness in relation to VISION 2020: the Right to Sight: an analysis for the Global Burden of Disease Study. *The Lancet Global Health* 2021; 9: e144-e160. DOI: 10.1016/S2214-109X(20)30489-7.