Vision Impairment among Older Adults in Low and Middle Income Countries

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Disclosures

• No conflicts of interest

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THE WORLD POPULATION 7.3 BILLION

36 MILLION PEOPLE ARE BLIND + 217 MILLION PEOPLE ARE MSVI = 253 MILLION PEOPLE ARE VISUALLY IMPAIRED

International Association for the Prevention of Blindness
About 90% of the world’s visually impaired live in low-income settings.

82% of people living with blindness are aged 50 and above.
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82% of people living with blindness are aged 50 and above.

80% of all visual impairment can be prevented or cured.
Association of Socioeconomics With Prevalence of Visual Impairment and Blindness

Wei Wang, MD; William Yan, MBBS; Andreas Müller, PhD, MPH; Stuart Keel, PhD; Mingguang He, MBBS, MD, MSc, MPH, PhD
Hypothesis

• Individual-level factors associated with vision impairment (VI) and receipt of eye care in older adults vary from country to country
Hypothesis

- Individual-level factors associated with vision impairment (VI) and receipt of eye care in older adults vary from country to country

- Public health efforts may benefit from an understanding of who is most likely to be blind, visually impaired, and/or not receive eye care
Methods

To provide longitudinal data on health and wellbeing of adult populations and the aging process across different countries
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- World Health Organization
- Panel study (Wave 1, 2007-2010)
- Nationally representative samples
- Adults age 50 and older
SAGE Countries
Methods

SAGE Wave 1, 2007-2010

Outcome 1: Vision impairment (visual acuity <6/18 better eye)
Outcome 2: Eye exam in last 2 years
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Predictors: demographics, socioeconomics, health and wellbeing, social participation and support

* Relevant based on literature review
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Analyses:  
  - Logistic models used to generate unadjusted (UOR) and adjusted odds ratios (AOR)
  - Heat maps constructed to display effect sizes
## Results

### Prevalence estimates

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<tbody>
<tr>
<td><strong>Distance VI</strong></td>
<td>9.9% (9.3-10.5)</td>
<td>12.2% (11.1-13.4)</td>
<td>18.2% (17.0-20.1)</td>
<td>15.5% (13.4-17.9)</td>
<td>25.4% (22.0-29.2)</td>
<td>10.9% (9.4-12.6)</td>
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<tr>
<td><strong>Near VI</strong></td>
<td>36.1% (35.0-37.1)</td>
<td>28.5% (26.9-30.1)</td>
<td>43.1% (41.1-45.1)</td>
<td>40.4% (37.1-43.7)</td>
<td>39.8% (36.0-43.8)</td>
<td>35.5% (33.0-38.2)</td>
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<td><strong>Eye Exams</strong></td>
<td>15.9% (14.7-17.2)</td>
<td>15.0% (13.8-16.2)</td>
<td>21.8% (20.2-23.4)</td>
<td>41.5% (38.3-44.8)</td>
<td>53.1% (49.3-56.8)</td>
<td>27.7% (25.4-30.1)</td>
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Heat maps
Distance VI

- Age: 80+
- Female
- College education
- Low wealth
- Food insecure
- Health insurance
- Access to medical care
- No recent eye exam
- Rural residence
- Severe disability
- >1 Medical comorbidity
- Poor memory
- Not married
- Low social support
- Low social participation

Countries:
- China
- Ghana
- India
- Mexico
- Russia
- S Africa
| Age: 80+          | Female          | College education | Low social support | Low wealth          | Food insecure        | Health insurance    | Access to medical care | Rural residence | Severe disability | >1 Medical comorbidity | Poor memory | Not married | Low social support | Low social participation |
|-------------------|-----------------|-------------------|--------------------|--------------------|---------------------|--------------------|----------------------|-----------------------|-------------------|---------------------|----------------------|-------------|-------------|-------------------|--------------------------|
| China             | Ghana           | India             | Mexico             | Russia             | S Africa            |                    |                      |                       |                   |                     |                      |             |             |                   |                         |

**Distance VI**
## Near VI

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Results

• Common associations with both near and distance VI:
  ♦ Older age
  ♦ Less education
  ♦ Greater disability
  ♦ More comorbidities
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• Common associations with both near and distance VI:
  ♦ Older age
  ♦ Less education
  ♦ Greater disability
  ♦ More comorbidities

• Common associations with only distance VI:
  ♦ Female sex
  ♦ Less wealth
  ♦ Unmarried
  ♦ Less participation
Results

• Common associations with both near and distance VI:
  ✷ Older age
  ✷ Less education
  ✷ Greater disability
  ✷ More comorbidities

• Less common associations:
  ✷ Lack of health insurance
  ✷ Rural residence

• Common associations with only distance VI:
  ✷ Female sex
  ✷ Less wealth
  ✷ Unmarried
  ✷ Less participation

• Less social support
  ✷ Food insecurity
Recent Eye Exam

- Age: 80+
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Countries:
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Results

• Common associations with lack of eye care:
  ♦ Less education
  ♦ Rural household
  ♦ Food insecurity
  ♦ Lack of health insurance
  ♦ Fewer comorbidities
Discussion

• There are distinct and shared demographic, economic, and health characteristics associated with VI and eye care among older adults in a diverse set of low and middle income countries (LMICs)
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• There are distinct and shared demographic, economic, and health characteristics associated with VI and eye care among older adults in a diverse set of low and middle income countries (LMICs)

• Data may be useful to focus public health efforts on older adults most likely to have VI and least likely to receive eye care
Discussion

Context is important

• Some constructs, e.g. social support, may have variable cultural significance in different countries

• Healthcare financing and access are highly variable

• Same association may exist for different reasons in different countries
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• Some constructs, e.g. social support, may have variable cultural significance in different countries

• Healthcare financing and access are highly variable

• Same association may exist for different reasons in different countries
  ♦ Fewer comorbidities is associated with less eye care
    • Do some individuals not get any medical care?
    • Are eye exams common among high risk groups?
Discussion

Gender, Vision, and Eye Care

• Globally, women are 30% more likely to be blind
• In some locations, women are less likely to receive cataract surgery and more likely to have trachoma
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Gender, Vision, and Eye Care

• Globally, women are 30% more likely to be blind

• In some locations, women are less likely to receive cataract surgery and more likely to have trachoma

In this study, women had...

• More distance VI in a majority of countries
  ♦ 56% more common in Chinese women than men

• A similar likelihood of receiving eye care
Limitations

• Self-reported data may be susceptible to recall bias

• Unknown if relationships are causative, bidirectional, or simply associational

• Country-level data may not adequately capture local context

• Results are not likely generalizable to other LMICs
Future directions

• Future work should consider:

  ♦ data from additional countries beyond SAGE
  ♦ sub-national data
  ♦ why specific associations exist in different countries
  ♦ longitudinal nature of associations (Wave 2 and 3)
  ♦ trends in receipt of eye care, VI, and disability
Conclusions

• Cross-national comparisons reveal the significance of context when studying vision

• There is value to considering traits not routinely assessed – e.g. social participation and isolation, food insecurity, etc.

• Data may be used to target those most likely to be affected by avoidable VI and disability
References


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Abigail Kumagai, BA