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Prevalence and causes of vision loss in South-east Asia and Oceania in 2015: magnitude, temporal trends and projections

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Prevalence and Causes of Vision Loss in South-east Asia and Oceania in 2015: Magnitude, Temporal Trends, and Projections

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ABSTRACT

Background: To assess prevalence and causes of vision impairment in South-east Asia and Oceania regions from 1990 to 2015 and to forecast the figures for 2020.

Methods: Based on a systematic review of medical literature, prevalence of blindness (presenting visual acuity (PVA)<3/60 in the better eye), moderate and severe vision impairment (MSVI; PVA<6/18 but ≥3/60), ~~and~~ mild vision impairment (PVA<6/12 but ≥6/18) and near vision impairment (>N5 or N8 in the presence of normal vision) were~~as~~ estimated for 1990, 2010, 2015, and 2020.

Results: The age-standardized prevalence of blindness for all ages and both genders was higher in the Oceania region but lower for MSVI when comparing the sub-regions. The prevalence of near vision impairment in people ≥50 years was 41% (UI 18.8-65.9). Comparison of the data for 2015 with 2020 predicts a small but non-significant increase in the numbers of people affected by blindness, MSVI and mild VI in both sub-regions. The numbers predicted for near VI in South-east Asia are from 90.68 million in 2015 to 102.88 million in 2020. The main causes of blindness and MSVI in both sub-regions in 2015 were cataract, uncorrected refractive error, glaucoma, corneal disease and age-related macular degeneration. There was no trachoma in Oceania from 1990 and decreasing prevalence in South-east Asia with elimination predicted by 2020.

Conclusions: In both regions the main challenges for eye care come from cataract which remains the main cause of blindness with uncorrected refractive error the main cause of MSVI. The trend between 1990 and 2015 is for a lower prevalence of blindness and MSVI in both regions.

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Introduction

Blindness and vision impairment are important causes of disability and reduced quality of life worldwide. Indeed, vision loss is the impairment that affects the third greatest number of people worldwide (after anaemia and hearing loss) with 0.94 billion (0.91 to 0.97 billion) people affected.[1] This study updates the prevalence and causes for blindness and vision impairment in South-east Asia and Oceania. Five-years have elapsed since the previous report of global and regional data for SE Asia and Oceania.[2] That study reported changes over the period of 1990-2010 and showed trends in both prevalence and numbers of people blind and with moderate and severe vision impairment (MSVI). The prevalence of blindness in South-east Asia had decreased but not in Oceania. However, the overall numbers of blind and MSVI had actually increased due to the increasing size of the older population. An updated analysis reported in this paper demonstrates whether these trends have continued.

This updated analysis includes the new epidemiological studies undertaken in the region. [3-7] It also provides greater granularity with information on mild vision impairment, near vision impairment and separation of age-related macular degeneration (AMD) from all cause macular degeneration now presented. This study also provides projections of the distance vision impairment burden to 2020.

Methods

The methodology used to calculate the prevalence estimates for vision impairment and blindness globally and for the seven regions has been published in full elsewhere with a brief overview given here. [8 9] Using data in the Global Vision Database, the trends for 1990-2015 were estimated for vision impairment prevalence with uncertainties intervals, by age and gender for 188 countries in the 21 Global Burden of Disease (GBD) regions. [10] The modelling also included forecasting the prevalence of blindness and vision impairment to 2020.[11]

Since the 2010 results were published, there have been several epidemiological studies performed in the region. [3-7] Using definitions and an analytical framework similar to that of Stevens et al,[12] statistical modelling was conducted to estimate the prevalence of three categories of distance vision loss and one for near vision impairment. In addition to blindness (presenting visual acuity worse than 3/60) and moderate and severe vision impairment (MSVI,

presenting visual acuity 3/60 - <6/18), mild vision impairment (6/18 - <6/12) was added as a third category of distance vision loss.[12] Near vision impairment has also been included as a new category defined as near vision of worse than N5 or N8 in the presence of normal vision, i.e. corrected distance visual acuity of 6/12 or better. The causes of vision impairment are defined by Flaxman et al.[9]

Two hierarchical Bayesian logistic regressions were fitted to estimate vision impairment prevalence over time, by age group, gender and country, with one model for the prevalence of blindness and one for the prevalence of MSVI and mild VI. Hierarchical linear trends over time were modelled giving region-specific trends in prevalence of vision impairment in each of the seven world regions. Prevalence estimates are reported as posterior means along with 80% posterior uncertainty intervals.

In the 1990-2010 report, all causes of macular degeneration were combined into one group. For this analysis age-related macular degeneration has been added as a separate specific cause of vision loss and other causes of macular degeneration were included in the "other" category. [9] The countries included in the South-east Asia region are listed in Table 1.

Results

There is a small, but non-significant, trend of a lower age-standardised prevalence of blindness and MSVI in people of all ages in the South-east Asian and Oceania sub-regions in 2015 compared with the 2010 data (Table 2). The prevalence of blindness and MSVI in men was lower than in women, but there was little difference in mild VI. The data on the prevalence of Near VI of 38.9% (Uncertainty interval [UI] 2.9-86.0) are given for the whole population. There were insufficient Near VI data to separate by region or by gender. Across the region there was 41.0% (UI 18.8-65.9) prevalence in people aged 50 years or older with Near VI.

The age standardised prevalence of blindness in 2015 was higher in the Oceania sub-region than South-east Asia for both men and women but the differences between the regions were not significant (Table 3). However, for MSVI and mild VI the South-east Asia region had a slightly higher but non-significant difference in prevalence for both genders.

Globally there has been an increase in life expectancy at birth to 71.4 years in 2015.[13] As vision loss from causes such as cataract, AMD and glaucoma are so strongly age-related an absolute increase in the numbers of people with blindness and MSVI is predicted from 2015 to

2020 (Table 4). A non-significant increase in Near vision loss is also predicted from 2015 to 2020. The percentage increase in numbers is similar in both regions with 13.4% in South-east Asia and 12.5% in Oceania.

In 2010 diabetic retinopathy caused 0.13% of the MSVI in SE Asia, but by 2015, this had increased to 0.71% of the MSVI. In Oceania, the increase was from 0.29% to 0.34% (Table 5). There was no trachoma found in Oceania and in the South-east Asian region there were low and decreasing rates from 1990 to 2015 with elimination predicted in 2020 (Supplementary Tables 1 and 2).

Country level data show a range in prevalence of blindness and MSVI for both men and women aged ≥50 years (Supplementary Figure 1 and Supplementary Figure 2). In men, the range in prevalence of MSVI in most countries is mainly between 10%-15% with four countries (Philippines, Timor-Leste, Myanmar and Lao PDR) above 20%. For MSVI in women, there are fewer countries in the 10% -15% range with the same four countries >20% prevalence. The trend for blindness is similar but a lower prevalence.

Discussion

The number of people who were blind in SE Asia and Oceania in 2015 is estimated at 3.54 million and 40 thousand, respectively representing almost 10% of global blindness. The accuracy of the regional estimates of the prevalence of blindness and vision impairment are affected by the quality and coverage of the raw data from which they are derived. Although we have triaged the available data and selected studies that met specified evidential criteria,[8] the coverage of robust data across the regions remains sparse. The majority of the data are derived from studies that have targeted certain geographic pockets. Urban areas tend to have been under-represented, and comprehensive, population-based nation-wide surveys, particularly in the SE Asian region are extremely limited.

One of the aims for Vision 2020 was to eliminate avoidable blindness and vision impairment by the year 2020. The global data prediction shows that uncorrected refractive error and cataract combined will account for 55.3% of the blindness burden and 77.4% of the MSVI burden in 2020 (Table 5). For glaucoma, AMD and corneal disease there has been little in the change in the proportion of vision loss both globally and the sub-regions with one exception that there was a slight but not significant decrease from 1990 to 2010 for AMD.

The ongoing meta-analyses of epidemiological data show decreases in public health parameters that reflect the effects of recent interventions. This enables the better allocation of resources for further activities. Indeed, this meta-analysis responds to the call of the World Health Organization (WHO) for evidence in the WHO Global Action Plan 2014-2019 to plan for eye care needs.[13]

A meaningful analysis of the global patterns of the prevalence of vision impairment requires some form of geopolitical categorization. In this report, we modelled data from the Oceania and SE Asian regions consistent with the Global Burden of Disease geopolitical subdivisions.[1] Although there is no universally accepted definition of Oceania, and it is not a World Health Organization (WHO)-recognized region, in the current study, the Oceania broadly reflects the Pacific Island nations in the WHO Western Pacific region.

Oceania contains some of the world's smallest, most isolated and least populous nations. In addition, according to United Nations' (UN) data on gross domestic product (GDP), Oceania is home to the poorest economies in the world.[14] Of the 193 member countries in the UN, Kiribati ranks 192, and the Marshall Islands, Federated States of Micronesia, Tonga, and Vanuatu are all in the bottom 10^{th} percentile. In terms of the gross national income (GNI), most of the countries in this study, from both the Oceanic and SE Asian groups, are categorized by the World Bank as either upper-middle income ($4,036 < GNI < $12,475 USD per capita) or lower-middle income status ($1,026 < GNI < $4,035 USD per capita).[15] Countries within these regions, such as Australia, New Zealand and Singapore that are classified as high income (> $12476 USD per capita in 2015) were included in a publication on high income countries.[15]

In the SE Asian region, the Malaysian national study included in the 2010 study found the overall prevalence of presenting blindness (VA < 3/60 in the better eye) in those aged ≥40 was relatively low (9/1000).[16] The sample size was also the largest from the SE Asian regional studies (18,027 individuals) hence, it carries considerable weight in the estimate modelling. In contrast, the population-based estimate of the prevalence of presenting blindness in those aged 40+ in central, rural Myanmar was 10 times this prevalence (8.1%).[17] Hence, there is considerable heterogeneity in terms of the prevalence of blindness and vision impairment amongst the studies from SE Asia and within regions of the same country.

This is the first meta-analysis to include data from Lao People's Democratic Republic (Lao PDR), one of the most rapidly urbanizing countries in the world.[4] The new data are derived

from an assessment of refractive error in school children from the Vientiane Province. The study reports an exceptionally low prevalence of uncorrected refractive error and a consequent near absence of any vision impairment. These data, therefore, have contributed to a small reduction in the overall age-standardised prevalence of blindness in the SE Asian region from 0.8% in 2010[2] to 0.57% in the current report. The age-standardised prevalence of blindness and vision impairment in the 50+ age group of both men and women was slightly reduced compared to the 2010 analysis.

Turning to Oceania, the estimates of the prevalence of blindness have increased since the 2010 report. In 2010, the overall prevalence of blindness in men was 0.7% and in women was 0.9%. In 2015, this has increased to 0.84% in men and to 1.20% for women. For the 50+ age group, the prevalence of blindness in men in 2010 was 2.7% and in women was 3.8%; this has increased to 3.43% for men and to 4.83% for women. The increase in the prevalence of blindness in the meta-analysis could be attributed to new data from The Republic of Fiji and The Democratic Republic of Timor-Leste Timor-Leste[5,6].

The study from Fiji was a population-based, subnational survey of 1381 residents ≥40 years of age on the main island of Viti Levu[5]. The prevalence of blindness (better eye < 6/60) was 2.6% and low vision (better eye < 6/18 but > 6/60) was 7.2%.[5] Increasing age, female gender and Indo-Fijian ethnicity were risk factors for vision impairment.

Although the proportion of blindness due to cataract has decreased considerably globally (44.1% in 1990 to 35.2% in 2015) such a decrease was not seen in SE Asia or Oceania. This could be related to the relatively small number of cataract surgeons in these regions. The ratio of ophthalmologists to the population is recommended to be at least 1 ophthalmologist per 100,000 people[18]. Countries where there the ratio was less than 1:100,000 included Indonesia, Laos PDR, Vietnam, Papua New Guinea, Timor-Leste Vanuatu and Kiribati.

The Oceania region, including Polynesia, Micronesia and Melanesia has the highest prevalence of diabetes in the world[19]. Between 1980 and 2014 there was little change in the age-standardized diabetes prevalence in adult women in western Europe. In contrast, over the same period, the age-standardized adult prevalence rose by 15% in men and women in Polynesia and Micronesia [19]. In the Fiji study, diabetic retinopathy was responsible for 4.2% of MSVI[20]. In individuals with previously unrecognized diabetes, vision-threatening severe retinopathy/maculopathy was identified in 15.4%, and vision impairment had already occurred in 7.7%.

The study from Timor-Leste was a population-based, national survey of 2041 mainland residents ≥40 years of age[21]. This was a follow-up to an earlier study[6], assessing the change in the prevalence of vision impairment after 5 years of eye care servicing the region. The prevalence of blindness (better eye < 6/60) was 7.7%. The relatively high prevalence of blindness in Timor-Leste is largely responsible for the higher estimate of blindness prevalence in the Oceania region. Cataract was the principal cause of blindness. Consistent with data from other non-urbanized regions in SE Asia,[17] diabetic retinopathy was not responsible for any vision impairment. However, a related survey in 2010 that measured glycosylated haemoglobin in a random cluster sample of Timorese residents found that the point prevalence of diabetes was 4.7% of which 73.9% was previously undiagnosed.[18] In 2012, obesity (body mass index > 30 kg/m2) amongst the Timorese was rare (< 1% of the adult population); however, economic advancement and increased urbanization in Timor-Leste is likely to see an increase in risk factors for type II diabetes.

This report is the first to provide meta-analysed data on the prevalence of near vison impairment. However, the most striking finding is the paucity of data on the unmet presbyopia need in these regions. There were no available data from SE Asia, and 2 reports from Oceania containing relevant information.[3 6]

In conclusion, the prevalence estimates of blindness and vision impairment in these regions, particularly SE Asia are heterogenous between and within countries. The presentation of summary data on this region must be interpreted cautiously. Compared with the 2010 estimates, the overall prevalence of blindness in SE Asia remains relatively unchanged. Additional high quality epidemiological data at the national level is required for better estimates and to drive informed policy making. Growing ophthalmic support in these regions would make such collaborative studies feasible. However, the new and robust data from Fiji and Timor-Leste have considerably improved the estimates from the Oceania region.

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Table 1. Countries included in the South-east Asia and Oceania regions

Oceania	Fiji, Kiribati, Marshall Islands, Federated States of Micronesia, Papua New Guinea, Samoa, Solomon Islands, Tonga, Vanuatu
South-east Asia	Cambodia, Indonesia, People's Democratic Republic of Lao, Malaysia, Maldives, Mauritius, Myanmar, Philippines, Seychelles, Sri Lanka, Thailand, Timor-Leste, Vietnam

Table 2: Age-standardised prevalence of blindness and vision impairment for people of all ages in South-east Asia and Oceania in 2015

Vision impairment Category	Sex	Mean %(95% CI)
Blindness		
	Male	0.57 (0.20-1.06)
	Female	0.83 (0.31-1.49)
	Both	0.72 (0.26-1.31)
MSVI		
	Male	4.64 (1.46-8.78)
	Female	5.09 (1.65-9.56)
	Both	4.88 (1.56-9.19)
Mild VI		
	Male	3.66 (1.00-7.06)
	Female	3.86 (1.07-7.42)

	Both	3.76 (1.03 -7.24)
Near VI		
	Both	38.91 (2.94-86.04)

MSVI moderate or severe vision impairment; VI vision impairment

Table 3. Age-standardised prevalence of blindness and vision impairment by sex and sub-region in South-east Asia and Oceania for 2015*

GBD Region	≥50 men	≥50 female	Men -all ages	Female~~Femen~~ all ages
Blindness				
South-east Asia	2.33 (0.90 - 4.11)	3.38 (1.38-5.85)	0.57 (0.20-1.06)	0.83 (0.31-1-49)
Oceania	3.43 (1.28 - 6.12)	4.83 (1.92)	0.84 (0.28-1.56)	1.20 (0.43-2.17)
MSVI				
South-east Asia	16.71 (5.84 - 30.68)	18.36 (6.60-33-32)	4.64 (1.46-8.79)	5.10 (1.65-9.57)
Oceania	15.07 (4.81 - 28.52)	16.46 (5.44-30.89)	4.10 (1.18-7.97)	4.52 (1.34-8.73)
Mild VI				
South-east Asia	11.78 (3.75 - 21.59)	12.22 (4.00-22.16)	3.67 (1.00-7.07)	3.87 (1.08-7.43)
Oceania	10.57 (2.86 - 20.03)	10.57 (2.86-20.03)	3.20 (0.75-6.29)	3.37 (0.79-6.59)
Near VI				
South-east Asia and Oceania region	41.02 (18.75 - 65.88)		34.36 (14.69 - 58.16)	

MSVI moderate or severe vision impairment; VI vision impairment

* Prevalence (%) with 80% uncertainty intervals

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Table 4. Numbers of people (millions) who are blind, have moderate, severe or mild vision impairment and near vision impairment in 2015 and projections for 2020

GBD region	Blind 2015	Blind 2020	MS VI 2015	MS VI 2020	Mild VI 2015	Mild VI 2020	Near VI 2015	Near VI 2020
South-east Asia	3.54 (1.3 - 6.33)	3.68 (1.29 – 6.69)	20.8 (9.77 – 38.87)	22.46 (9.8 – 37.34)	17.91 (6.31 - 32.86)	19.44 (6.53 - 36.07)	90.68 (35.16 - 152.86)	102.88 (39.99 – 173.19)
Oceania	0.04 (0.01 - 0.07)	0.04 (0.01 - 0.08)	0.17 (0.07 - 0.30)	0.19 (0.08 - 0.34)	0.16 (0.05 - 0.3)	0.18 (0.05 - 0.35)	0.96 (0.38 - 1.63)	1.12 (0.45 – 1.9)
World	36.02 (12.86 - 65.44)	38.5 (13.18 - 70.95)	216.6 (98.51 - 359.07)	237.08 (101.5 - 399.02)	188.54 (64.46 - 350.19)	205.73 (67.3 - 385.11)	1094.75 (581.13 - 1686.54)	1229.59 (653.43 - 1884.29)

MSVI moderate or severe vision impairment; VI vision impairment

	GBD region	Refractive error		Cataract		Glaucoma		AMD		DR		Cornea		Trachoma		Other	
		Blind (%)	MSVI (%)	Blind (%)	MSVI (%)	Blind (%)	MSVI (%)	Blind (%)	MSVI (%)	Blind (%)	MSVI (%)	Blind (%)	MSVI (%)	Blind (%)	MSVI (%)	Blind (%)	MSVI (%)
1990	S E Asia	12.21 (10.29 - 14.08)	44.14 (38.96 - 48.67)	36.67 (30.11 - 43.22)	37.59 (31.31 - 43.79)	7.15 (2.71-19.94)	1.58 (0.58-2.87)	6.13 (1.47-12.91)	4.08 (0.89-8.70)	0.29 (0.05-0.60)	0.33 (0.06-0.68)	6.49 (1.25-13.89)	2.52 (0.41-5.48)	0.67 (0.65-0.68)	0.34 (0.33-0.35)	18.82 (6.52-34.21)	9.41 (2.80-18.53)
	Oceania	12.38 (10.48 - 14.23)	46.62 (42.35 - 50.11)	48.68 (40.69 - 56.46)	36.25 (30.17 - 42.25)	7.17 (2.70-19.96)	1.52 (0.56-2.74)	5.18 (1.17-11.04)	3.53 (0.73-7.58)	0.28 (0.05-0.58)	0.29 (0.06-0.60)	6.61 (1.31-13.96)	2.47 (0.41-5.35)	0.00 (0.00-0.00)	0.00 (0.00-0.00)	19.72 (6.87-33.73)	9.33 (2.79-18.34)
	World	19.95 (17.29 - 21.72)	50.80 (46.12 - 54.74)	48.26 (40.37 - 55.88)	26.62 (21.53 - 31.78)	8.66 (3.25-15.72)	2.14 (0.69-4.11)	7.93 (2.32-15.54)	5.97 (1.63-11.87)	0.85 (0.15-1.83)	1.03 (0.20-2.22)	5.76 (1.04-12.57)	1.75 (0.25-3.81)	2.78 (0.66-2.90)	1.99 (1.88-2.09)	18.78 (7.2-32.87)	9.71 (3.03-18.50)

2010	S E Asia	12.51 (10.73 - 14.27)	66.08 (61.82 - 69.66)	45.89 (36.08 - 55.34)	24.22 (19.54 - 28.83)	7.01 (2.83-12.43)	1.07 (0.38-1.97)	5.55 (1.44-11.27)	1.35 (0.39-2.67)	0.51 (0.09-1.09)	0.13 (0.03-0.26)	4.63 (0.86-10.00)	0.79 (0.16-1.63)	0.28 (0.26-0.30)	0.06 (0.04-0.08)	23.61 (8.15-42.95)	6.30 (1.89-12.50)
	Oceania	12.56 (10.73 - 14.34)	47.55 (44.27 - 50.31)	48.24 (38.37 - 57.62)	35.34 (28.46 - 42.37)	6.69 (2.70-11.90)	1.41 (0.54-2.52)	3.27 (0.79-6.71)	2.17 (0.51-4.59)	0.28 (0.05-0.59)	0.29 (0.06-0.60)	4.53 (0.92-9.56)	1.65 (0.30-3.49)	0.00 (0.00-0.00)	0.00 (0.00-0.00)	24.43 (8.49-44.31)	11.58 (3.45-22.80)
	World	20.23 (18.16 - 22.20)	52.12 (48.44 - 55.23)	35.67 (27.74 - 43.66)	25.55 (19.80 - 31.54)	8.48 (3.17-15.38)	2.04 (0.66-3.93)	6.28 (1.68-12.64)	4.65 (1.21-9.53)	0.99 (0.16-2.19)	1.21 (0.21-2.68)	3.37 (0.58-7.39)	1.19 (0.19-2.55)	1.54 (1.38-1.71)	1.07 (0.93-1.21)	23.43 (8.98-40.83)	12.17 (3.87-23.03)
2015	S E Asia	12.57 (10.79 - 14.33)	46.14 (42.19 - 49.51)	45.00 (34.22 - 55.54)	33.95 (26.09 - 42.07)	6.99 (2.69-12.56)	1.57 (0.56-2.94)	5.24 (1.27-10.81)	3.46 (0.79-7.33)	0.59 (0.09-1.26)	0.71 (0.12-1.49)	4.39 (0.73-9.72)	1.63 (0.26-3.53)	0.13 (0.11-0.15)	0.07 (0.05-0.08)	25.09 (8.66-45.62)	12.48 (3.71-24.59)
	Oceania	12.61 (10.79	47.76 (44.48	47.29 (36.49	34.60 (26.95	6.72 (2.60-12.07)	1.43 (0.52-2.64)	3.08 (0.70-6.35)	2.07 (0.47-4.37)	0.32 (0.05-0.67)	0.34 (0.06-0.70)	4.24 (0.77-9.13)	1.55 (0.26-3.34)	0.00 (0.00-0.00)	0.00 (0.00-0.00)	25.75 (8.95-46.71)	12.25 (3.65-24.12)

		- 14.39)	- 50.49)	- 57.70)	- 42.45)												
	World	20.28 (18.23 - 22.24)	52.34 (48.66 - 55.45)	35.15 (26.40 - 44.03)	25.15 (18.83 - 31.76)	8.49 (2.99-15.66)	2.05 (0.62-4.03)	5.93 (1.46-12.18)	4.38 (1.05-9.15)	1.06 (0.15-2.38)	1.30 (0.20-2.93)	3.21 (0.50-7.19)	1.14 (0.17-2.48)	0.97 (0.80-1.15)	0.64 (0.50-0.79)	24.92 (9.58-43.36)	13.00 (4.14-24.57)
2020	S E Asia	12.64 (10.87 - 14.40)	46.55 (42.64 - 49.89)	43.59 (31.74 - 55.37)	32.65 (24.00 - 41.77)	7.04 (2.50-13.01)	1.60 (0.52-3.11)	5.29 (1.16-11.14)	3.56 (0.73-7.74)	0.79 (0.11-1.72)	0.97 (0.14-2.09)	4.21 (0.61-9.52)	1.56 (0.21-3.45)	0.00 (0.00-0.00)	0.00 (0.00-0.00)	26.43 (9.11-48.08)	13.10 (3.89-25.85)
	Oceania	12.64 (10.83 - 14.43)	47.89 (44.54 - 50.67)	46.33 (34.39 - 58.02)	33.91 (25.32 - 42.81)	6.73 (2.42-12.42)	1.45 (0.49-2.77)	2.88 (0.60-5.98)	1.96 (0.41-4.20)	0.35 (0.05-0.74)	0.38 (0.06-0.79)	4.03 (0.64-8.81)	1.48 (0.22-3.24)	0.00 (0.00-0.00)	0.00 (0.00-0.00)	27.05 (9.39-49.08)	12.93 (3.85-25.47)
	World	20.58 (18.52 - 22.54)	52.61 (48.86 - 55.76)	34.73 (25.04 - 44.63)	24.75 (17.77 - 32.12)	8.43 (2.75-15.96)	2.05 (0.57-4.15)	5.57 (1.23-11.72)	4.16 (0.89-8.94)	1.20 (0.16-2.75)	1.49 (0.20-3.43)	3.09 (0.42-7.09)	1.10 (0.14-2.45)	0.40 (0.30-0.58)	0.22 (0.16-0.37)	25.99 (9.96-45.27)	13.61 (4.34-25.73)

Table 5. Proportions of blindness and moderate and severe vision impairment by cause in 2015 for all ages

Appendix Figure 1. Ladder plot showing the age-standardised prevalence of blindness in men and women aged ≥50 years in South-east Asia and Oceania regions in 2015 (point estimates with 80% uncertainty intervals are displayed).

Appendix Figure 2. Ladder plot showing the age-standardised prevalence of moderate and severe vision impairment in men and women aged ≥50 years in South-east Asia and Oceania regions in 2015 (point estimates with 80% uncertainty intervals are displayed).