Letter to the editor - correspondence

Reporting of inequalities in blindness in low- and middle-income countries: a review of cross-sectional surveys

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Introduction

The World Health Organization's (WHO) *Universal Eye Health: a Global Action Plan 2014-2019* calls for equity in eye health.[1] To achieve this, we must first understand the nature and extent of existing inequalities (i.e. differences between population subgroups), which vary across settings. Cross-sectional surveys have highlighted that women experience disproportionate levels of blindness and barriers to accessing eye care, but there is little synthesised evidence for other inequalities in eye health.[2] The 'PROGRESS' framework provides a systematic approach to identify axes of social stratification linked to health inequality: Place of residence; Race/ethnicity/culture/language; Occupation; Gender/sex; Religion; Education; Socioeconomic status (SES); Social capital.[3] We applied PROGRESS to assess the nature and extent of reporting of blindness across social subgroups—and therefore the capacity to assess inequality—in low and middle-income countries (LMICs).

Methods

We undertook a systematic search to identify blindness prevalence surveys conducted in LMICs and published between January 2008 and December 2015.[4] Studies were evaluated for i) disaggregation of blindness prevalence data by PROGRESS factors, plus age, and ii) analyses undertaken to assess differences between social subgroups. For PROGRESS factors analysed in ≥10 studies the proportion of studies reporting a significant subgroup difference in blindness prevalence was calculated (age omitted as it is not of itself an inequitable cause of blindness).

Results

The 88 included studies occurred in 32 countries. Blindness was disaggregated by at least one PROGRESS factor in 83 studies (94%), and some form of subgroup analysis was undertaken in 40 studies (45%; Table 1). Gender (91%), age (53%), and education (26%) were the factors most commonly reported and/or analysed.

Table 1: Disaggregation and subgroup analysis by PROGRESS factors and age in blindness prevalence surveys published 2008-2015

Factors for disaggregation or subgroup analysis	Number of studies n/88 (%)				
	Disaggregation n=83 (94)		No disaggregation n=5 (6)		Disaggregation and/or subgroup analysis
	Subgroup analysis	No subgroup analysis	Subgroup analysis	No subgroup analysis	
Total	39 (44)	44 (50)	1 (1)	4 (5)	88 (100)
PROGRESS factors †					
Place of residence	13	6	-	-	19 (22)
Race/ethnicity/culture/language	3	-	-	-	3 (3)
Occupation	3	3	-	-	6 (7)
Gender/sex	38	41	1	-	80 (91)
Religion	-	1	-	-	1 (1)
Education	16	6	1	-	23 (26)
Socioeconomic status	1	1	-	-	2 (2)
Social capital	1	-	-	-	1 (1)
Age	26	20	1	-	47 (53)

† A study was counted each time it reported a PROGRESS factor

Approximately two-thirds (n=27, 68%) of the 40 studies undertaking subgroup analysis described the analytical approach used. Subgroup analysis results were most commonly reported as an odds-ratio from logistic regression (n=27, 68%), followed by a p-value without further explanation (n=7, 18%) and chi-squared test (n=5, 13%). Subgroup analysis was reported for three PROGRESS factors in ≥10 studies (Table 2). Significant differences in blindness prevalence were commonly found across education level (76%) and less commonly across gender (38%) and place of residence (31%).

Table 2: Subgroup analysis results for PROGRESS factors analysed in ten or more blindness prevalence surveys published 2008-2015

PROGRESS factor †	Advantaged subgroup ‡	Number of studies	Difference in blindness prevalence between subgroups § Number of studies (%)		
			No difference	Higher in advantaged	Higher in disadvantaged
Gender/sex	Male	39	21 (54)	3 (8)	15 (38)
Education	Literate/ higher education	17	4 (24)	-	13 (76)
Place of residence	Urban dwellers	13	9 (69)	-	4 (31)

PROGRESS: Place of residence; Race/ethnicity/culture/language; Occupation; Gender/sex; Religion; Education; Socioeconomic status; Social capital
† age was omitted as it is not an inequitable cause of blindness
‡ for each PROGRESS factor, the more advantaged group was identified *a priori*
§ a reported statistically significant difference in blindness prevalence between subgroups

Discussion

WHO recommends blindness data are disaggregated by age and gender[1] and these are the factors most commonly reported and analysed in recently published surveys (Table 1). Attention to PROGRESS factors beyond gender will likely uncover other important inequalities and inequities in blindness prevalence. For example, where education level—which is associated with higher awareness, SES, and access to health care[3]—was explored in this study, higher education was commonly associated with lower levels of blindness (Table 2).

Gender, SES and urban/rural domicile are recommended as the minimum factors by which to monitor inequality in the global Universal Health Coverage initiative,[5] and these are equally appropriate for monitoring blindness. However, given social inequalities vary both within and between settings, so too will PROGRESS factors relevant to blindness prevalence. In addition to global indicators, locally relevant PROGRESS factors should be identified and carefully constructed.[2, 5]

Our findings show that almost one-third of studies attempting subgroup analysis did not outline the analytical approach in the methods, and highlight variability in the statistical reporting of results. The conduct and reporting of such analyses would be improved by more rigorous application of existing guidelines for observational studies.[4]

Reporting of blindness across social subgroups is essential to monitor inequality in blindness prevalence, and authors have a responsibility to ensure meaningful use of available data. Inclusion of locally relevant PROGRESS indicators in the analysis and reporting and of blindness prevalence surveys will broaden our understanding of blindness inequalities, and inform interventions to promote equity in eye health.[2, 3]

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