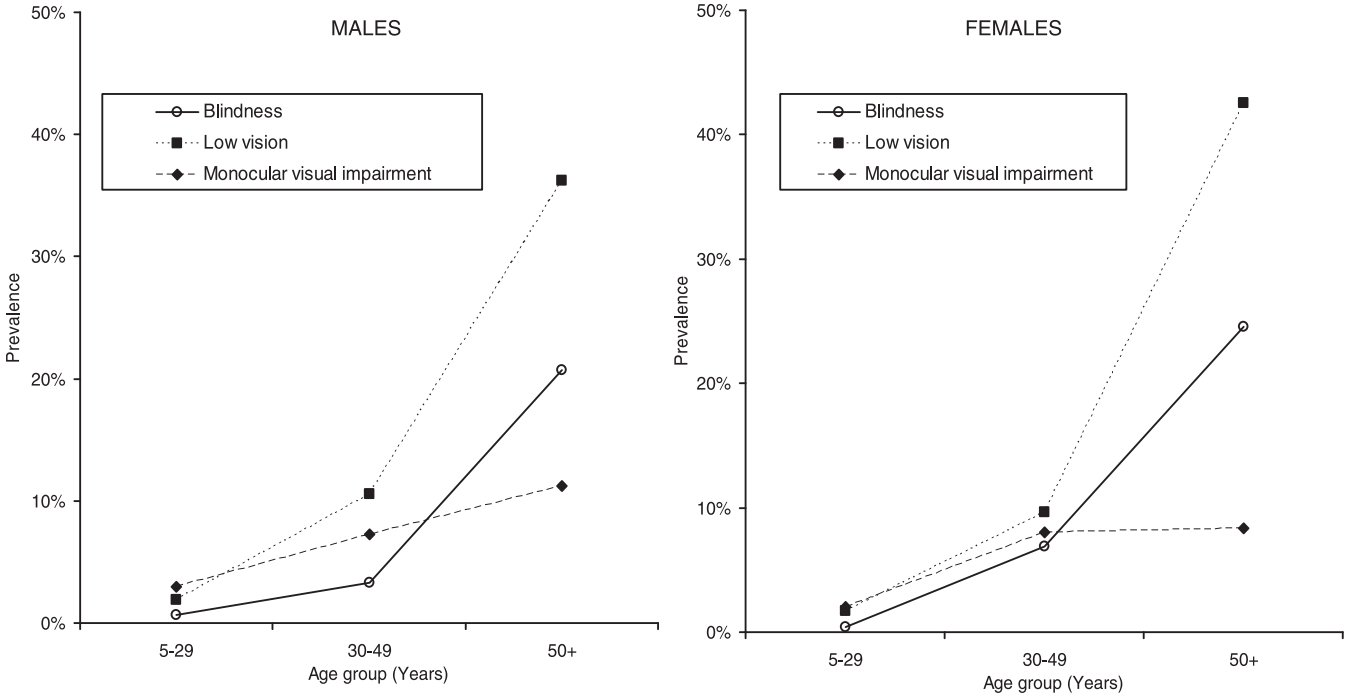

Figure 2. Age and Sex Distribution of Blindness, Low Vision, and Monocular Visual Impairment
Left graph, males; right graph, females.
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not curable, most easily preventable. Data were double entered by different entry clerks and compared for consistency using EpiInfo version 3.3.2 (Centers for Disease Control and Prevention [http://www.cdc.gov/EpiInfo]). Statistical analysis was conducted using Stata version 8.2 (Stata Corporation [http://www.stata.com]). Pearson χ^2 was used to assess the age and sex distribution of the sample population. Confidence intervals for the point estimates were derived using the Huber/White sandwich estimator of variance to adjust for clustering effects at the household level [16]. Sensitivity analysis of the prevalence estimates was undertaken by including all the enumerated persons in the denominator under the assumption that the absentees had no visual impairment; and the size of the change in prevalence estimates assessed. Inter-rater agreement of eye examination (VA and determination of cause) was assessed using the kappa (κ) statistic [17]. To derive population estimates of burden, prevalence estimates were adjusted for age and sex according to the sample population structure. The 95% confidence intervals (CIs) of the adjusted prevalence estimates were multiplied by the population estimates to derive the lower and upper bounds of those with blindness, low vision, and monocular visual impairment.

Ethical Considerations

The Sudan People's Liberation Movement Secretariat of Health (SPLM/Health) approved the protocol, and clearance to conduct the surveys was obtained from the local authorities. Verbal consent to participate was sought from the head of the household, and from each individual, and the parents of small children in accordance with the declaration of Helsinki. Personal identifiers were removed from the dataset before analyses were undertaken.

Results

Sample Population

Twenty two villages (clusters) were sampled and 529 households visited. The mean household size was 7.5 (standard deviation [SD] = 2.5) with household size ranging from three to 16 persons. A total of 2,499 persons aged 5 y and above underwent VA testing and basic eye examination out of 2,954 persons enumerated, a response rate of 84.6%. Of the 2,499 persons included in the analysis, 1,038 (41.5%) were males and 1,461 (58.5%) were females (Table 1). The age and sex distribution among the 454 persons not examined was the same; however, there were more females than males aged 15 y and above among persons examined (Pearson $\chi^2 = 41.1$; p-value = 0.001). The age range was 5 y to 80 y, with a mean age of 23.9 y (SD = 16.6).

Prevalence of Blindness, Low Vision, and Monocular Visual Impairment

The age/sex-specific and overall prevalence of blindness, low vision, and monocular visual impairment found in this study are shown in Figure 2 and Table 2. Overall prevalence of blindness (VA of less than 3/60 in the better eye) was 4.1% (95% CI, 3.4–4.8). Prevalence of low vision (VA of at least 3/60 but less than 6/18 in the better eye) was 7.7% (95% CI, 6.7–8.7); whereas prevalence of monocular visual impairment (VA of at least 6/18 in the better eye and VA less than 6/18 in the other eye) was 4.4% (95% CI, 3.6–5.3). Prevalence of blindness and low vision increased in both males and females with age. There were no differences between the sexes in the odds of blindness (odds ratio [OR] = 1.38; 95% CI, 0.92–2.06), low vision (OR = 1.12; 95% CI, 0.82–1.53), and monocular visual impairment (OR = 0.90; 95% CI, 0.60–1.33). Sensitivity analysis of prevalence estimates by including 454 absentees