

Letters to the Editors

Nutritional blindness and diarrhoea in Bangladesh

Nutritional blindness due to vitamin A deficiency needlessly blinds 30000 preschool-age children in Bangladesh each year. The sight of over 100000 children is threatened by corneal lesions.

These figures come from a national study by Helen Keller International (HKI), the Institute of Public Health and Nutrition (IPHN), and the Programme for the Prevention of Blindness. The International Centre for Diarrhoeal Disease Research in Bangladesh (ICDDR,B) collaborated in data analysis. Over 22000 children under 6 years were examined by experienced ophthalmologists in 100 sites throughout rural Bangladesh and in the worst possible urban slums. A seminar on the findings was held in Dhaka in May 1983. Several related publications are available (Cohen *et al.* 1983*a,b*; IPHN and HKI, 1983). In summary, prevalence of rural nightblindness for children was 3.6%, Bitot spot 0.9% and active corneal lesions (X2/X3) 10.2 per 10000 (95% confidence limits 6.5–15.9 per 10000).

It is encouraging to see the ICDDR,B addressing the association between diarrhoeal disease and xerophthalmia. Unfortunately, the article by Khan *et al.* (1984) appears to contain serious errors.

Methodological errors. The sample frame is biased, being based on self-reporting of eye complaints. Such bias may explain how, for example, over ten times fewer children under 6 years were found to have any of the eye signs or symptoms of xerophthalmia, as compared with the national study which systematically interviewed and examined each child in every sample cluster household. Still, it is difficult to understand why not a single blind child was reported from an all-ages population of 182000, as compared with a rural preschool-age binocular blindness rate of 6.4 per 10000 (95% confidence limits 3.7–11.2 per 10000) in the IPHN and HKI (1983) study.

Analytical errors. The World Health Organization's classification of xerophthalmia, in which corneal erosions, ulceration and keratomalacia are classified as X3A/X3B, has not been understood. The test only refers to corneal xerosis. More seriously, it is almost meaningless to give all-age rates in the summary for a disease whose most important effects predominantly involve young children. A similar comparison would be the use of crude (all-ages) rates for stroke. The dominance of xerophthalmia in young children is brought out in Fig. 1 of the paper by Khan *et al.* (1984) but here, as in other instances, prevalence (cases existing at the time of the survey) is completely confused with incidence (new cases).

Errors in conclusions. It is difficult to equate the low prevalence reported for xerophthalmia by Khan *et al.* (1984) with serum vitamin A levels for 20% of the under 6 year-old population of below 100 µg/l, measured by the ICDDR,B in the same population in about the same year (Brown *et al.* 1980). Any attempt to do so should probably start with the high potency vitamin A capsule coverage in the study area – for which no figure is given.

We agree that much needs to be known about the association between diarrhoea and eye lesions threatening sight. The danger is that if health-policy makers were to follow the unrepresentative conclusions of Khan *et al.* (1984), which tend to diminish the scale of nutritional eye disease, even more Bangladeshi children risk blindness.

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Reply to letter by Jalil et al.

Thank you for giving me the opportunity to reply to the letter from Jalil *et al.*, following the publication of our paper (Khan *et al.* 1984). I will restrict my reply to the specific matters raised in the letter.

Methodological errors. In the early stages of nightblindness, the very young children do not know, in most instances, that they have any visual defect. Only when it is advanced will the parents or older children detect it. Self-reporting was never done in these cases. The parents, brothers or sisters brought all such cases to us. Only some of the older people with other complaints reported to us by themselves. We first visited every house, asked about any defect of the eyes of any member of the family. We noted the census number of any complaints and issued them a slip to be produced to the eye examination team on the following day. We reject, therefore, the allegation that the study was biased.

Analytical errors. It seems that Jalil *et al.* have not carefully gone through Tables 1–5 where the age distribution is clearly shown. We have used the latest World Health Organization's classification and this was accepted by the referees. We do understand the difference between prevalence and incidence.

Errors in conclusions. The study by Brown *et al.* (1980) to which the letter refers, was carried out during 1976–78 after the famine in Bangladesh and they had selective groups of children. It is not unlikely that the serum vitamin A levels were lower following the famine. Dr A. N. Alam of the International Centre for Diarrhoeal Disease Research, Bangladesh, found an identical prevalence rate in the same area in 1984. It was not our aim to do a vitamin A distribution survey for Helen Keller International. Since only about 50% of all the children attend schools for a brief period, information on the distribution of vitamin A through schools will be limited to a fraction of the children.

Statistical analysis is essential when samples are small and differences marginal. When the sample size is large and the differences outstanding, statistical analysis may be an unnecessary exercise. Our findings were presented at the Bangladesh Nutrition Conference. Professor Jalil did not question the findings then. They were also presented to the Bangladesh Association for the Advancement of Science. None questioned the data, methods or analytical error. Dr Cohen received a full version of our paper before it was published. He did not raise any objections to its contents.

We believe that vitamin A deficiency is one of the important issues causing major eye problems in Bangladesh.

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