MDIS

GLOBAL PREVALENCE OF VITAMIN A DEFICIENCY

TABLES SUMMARIZING VITAMIN A DEFICIENCY PREVALENCE BY COUNTRY IN EACH WHO REGION
INTERPRETING DATA IN THE MDIS

To ensure their proper interpretation there are several considerations which must be borne in mind in the present analysis and presentation of VAD prevalence data. Although efforts have been made to standardize methodologies employed in the design and implementation of VAD prevalence surveys, there is in fact considerable variation in the way these surveys were conducted and how results were analysed. This means lack of comparability across studies.

Survey design

Depending upon the objectives for VAD surveillance, distinctly different approaches have been used in the design of surveys and the selection of samples to ensure the greatest degree of representativeness. For cross-sectional surveys, when data are collected at a single point, it is generally appropriate to use stratified sampling techniques with sample sites being selected to provide a representative impression of a population, using either random, cluster or PPS (population proportional to size) techniques. Since clinical VAD is rare, even in areas where there is a significant public health problem, i.e. 1 case of corneal xerophthalmia seen in 1000 children (X2 = .01%) the sample size requirements for clinical surveys must be quite substantial to ensure reliability. It is crucial, therefore, that sample size calculations be considered when reviewing data and when ascertaining the precision of individual survey estimates. Furthermore, since in most developing countries, VAD tends to occur only in a small number of communities (clustered) rather than being equally distributed throughout populations (homogenous) specific survey sampling designs are required so that variance estimates are not miscalculated and confidence intervals misrepresented.

A survey methodology influences the interpretation of results in terms of their representativeness and statistical precision, and different methodologies make inter-country comparisons difficult. The MDIS has attempted to deal with this problem by cataloguing the sampling methods used in each survey, including the design, selection of sites, selection of individuals, and the sample size. However, many documents which summarize information from VAD prevalence surveys do not provide complete information on the study methodology.

Subject selection

The MDIS has also included information on subject characteristics: sex, age, and sub-national residence. This information is particularly important for comparing prevalence estimates across studies. There are important differences in the prevalence of VAD in various age groups, and so direct comparisons are difficult. It is imperative to detail this information when presenting VAD prevalence data.

Data aggregation

For purposes of global advocacy, an understanding of the national magnitude of VAD is required. However, the aggregation of data to derive a single national estimate limits the ability to highlight the important differences that may exist in the distribution of VAD within countries. In the MDIS, data are maintained for sub-national areas, so that the intra-country disparities in VAD may be seen, and populations at greatest risk recognized.

Limitations

The data presented in this document are the most up-to-date vitamin A prevalence information available to the MDIS based on an extensive literature review and reports available to WHO and other organizations. These estimates will be revised periodically as more data become available. It is recognized that some reports may have been missed because they were not published,
or otherwise unavailable to WHO. One of the prime objectives of this document is to identify and fill remaining gaps in the global database, and to gain access to supplementary information that will ensure that subsequent revisions are complete.

Surveys from small areas may provide a biased prevalence estimate, especially if they are performed in areas known to have a high prevalence of VAD, and may not represent the entire country. The present document makes no claims about the accuracy of laboratory procedures performed in the surveys, the comparability of the cross-survey assessments, or the methods employed in each survey. For more details about the characteristics of individual surveys, the reader is directed to original documents as specified in the Bibliographic references section. These references are on file as part of the MDIS database in the WHO Nutrition unit.

GUIDE TO USING SUMMARY TABLES

Each country where a problem of VAD is documented or suspected is listed by WHO region. Where data are based on surveys prior to 1980, judgement is used in determining how recent developments may have altered the situation. An "X" designates the estimated category of deficiency, i.e. clinical, severe subclinical or moderate subclinical where survey data are not available but current reports indicate there is a problem. When a rate is derived from more than one survey, a superscript E is inserted by the number. Where known, the year of the survey on which the prevalence is based is given. The national population figure is the UN projection for 1995 of the 0-4-year-age group. Prevalence values in the table are therefore for preschool-age children only.

Criteria used to define the severity of a public health problem are as follows:

Clinical. The number in the table refers to the prevalence of total xerophthalmia, or of other clinical eye signs, i.e. Bitot's spot (X1B), corneal xerosis (X2), keratomalacia (X3) and corneal scars (XS) and/or symptoms, i.e. nightblindness (XN) measured. Values are included only if they exceed the level defined by WHO as constituting a public health problem as defined in Table 5. Where clinical data are documented the population clinically affected is noted (in thousands) in parentheses directly below the prevalence (%).

Severe subclinical VAD. A prevalence of ≥20% with blood values ≤0.70 μmol/l (with or without clinical eye signs or symptoms) as shown in Table 6.

Moderate subclinical. A prevalence of ≥10−<20% with blood values ≤0.70 μmol/l (with or without clinical eye signs or symptoms) as shown in Table 6.

A multipication factor was derived for countries where representative national surveys of vitamin A deficiency were unavailable. Where sub-national surveys were available, extrapolations were made to the proportion of the total country likely to be affected considering similar ecological conditions. From this a multipication factor was generated as shown in Table 7:

<table>
<thead>
<tr>
<th>Estimated portion of country affected</th>
<th>Multiplication factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>National sample</td>
<td>0.75</td>
</tr>
<tr>
<td>&gt;60−&lt;75%</td>
<td>0.60</td>
</tr>
<tr>
<td>&gt;30−&lt;60%</td>
<td>0.40</td>
</tr>
<tr>
<td>&gt;20−&lt;30%</td>
<td>0.25</td>
</tr>
</tbody>
</table>

The at-risk population was estimated as follows. The multiplication factor was applied in countries in which WHO criteria to identify a public health
problem of VAD clinically or subclinically were met. The total population of children 0-4 years of age according to the UN projection for 1995 multiplied by the factor determined the total, i.e. clinically + subclinically, at-risk population. In countries with clinical VAD, the prevalence of clinical signs was multiplied by the total at-risk population to estimate the number of children clinically affected. That number is given in parenthesis under the clinical prevalence figure. In countries with no clinical problem but a severe subclinical one, the at-risk population estimate includes those who also are moderately subclinically deficient.