

PC software review

CDC Anthropometric Software Package (CASP)

The National Center for Health Statistics (NCHS) anthropometric standards have been adopted by the World Health Organization (WHO) as the international reference for comparing the nutritional status of children up to ten years old.¹ So far, these standards have been available in either tabular or graphic form^{2,3} or as a mainframe computer package available from the Center for Disease Control, Atlanta, USA. This has limited their usefulness to health planners – particularly those working in Third World countries – who often have data sets which are too large to analyse manually and who also have little or no access to mainframe computers. Health professionals involved in child health and nutrition programmes will therefore welcome the recent availability of the NCHS/WHO standards for use on micro-computers.

Given a child's age (or date of birth and date of visit), sex, weight and height (or recumbent length), the CDC Anthropometric Software Package (CASP) evaluates the weight for age, weight for height and height for age expressed as centiles, Z-scores and percentages of the median. The package is subdivided into three major programs:

- ENTRY provides statistics interactively and saves data to disk if required.
- BATCH analyses data sets already present in a disk file.
- TAB is a very useful tabulation routine.

The TAB program uses data generated by ENTRY or BATCH to produce tabulations of nutritional status by age, sex and up to ten additional variables provided by the user.

Centiles (or percentiles) seem to be preferred by clinicians, as these can easily be interpreted as the rank that a child would occupy if 100 children from the reference population were

lined up in ascending order of weight or height. Many statisticians and epidemiologists prefer to use Z-scores, or the number of standard deviations a child is above or below the median weight or height (the median, rather than the mean, is used because it is a more stable statistic, being less affected by skewness in the distribution or by outliers). The third alternative – the percentage of the median reference weight or height – is very popular among nutrition workers in some areas of the world like Latin America where the Gomez classification⁴ is still widely used. The main disadvantage of this approach is that a given percentage of the median – say 90% of the standard weight for age – may mean different things at different ages. So far, a major advantage of using the percentage of the median is that it is easy to calculate and it only requires simple reference tables with the median weight or height at each given age (and with the median weight for each given height, when using the measure of weight for height). With the wider availability of microcomputers and of packages like CASP this situation will change for the better.

A health planner, for example, might input data for children from several health centres and obtain the prevalences of malnutrition by health centre, municipality, district, state, etc. The TAB program easily allows the definition of different cut-off points so that, according to the available resources, the health planner may select the cut-off which gives the number of 'malnourished' children which can be appropriately looked after. Using this new cut-off, the numbers of such children in each geographical area can easily be tabulated and resources allocated accordingly.

A minor disadvantage of the program is that weight for length cannot be calculated for children under 49 cm (this is a limitation of the NCHS/WHO standards themselves). This was

the case for 35% of a series of Brazilian newborns I am studying. Another possible pitfall is that there is a disjunction of the lower Z-score curves at 24 months when switching from recumbent length to standing height. This may cause a spurious decrease in the prevalence of wasting from 18–23 months and a sudden increase after 24 months when analysing the age distribution of wasting for data sets which include some children who were measured lying down and others who were measured standing up.⁵

The CASP package runs on IBM-PC or compatible microcomputers with one floppy disk drive. The excellent documentation for the programs is included on the same diskette. Further information and a copy of the program may be obtained from:

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References

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