

Reliability of percentage ideal weight for height

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Abstract

Aims—To assess the reliability of percentage ideal weight for height (%WFH) as a measure in children.

Methods—Forty two dietitians calculated %WFH of six children. Eleven of the 42 repeated the calculations.

Results—Interexaminer estimates varied by 16.5 to 40 percentage points (mean 27.8). Intraexaminer variability was also large.

Conclusions—%WFH is an unreliable measure of nutritional status.

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Keywords: weight for height; nutritional status; reliability

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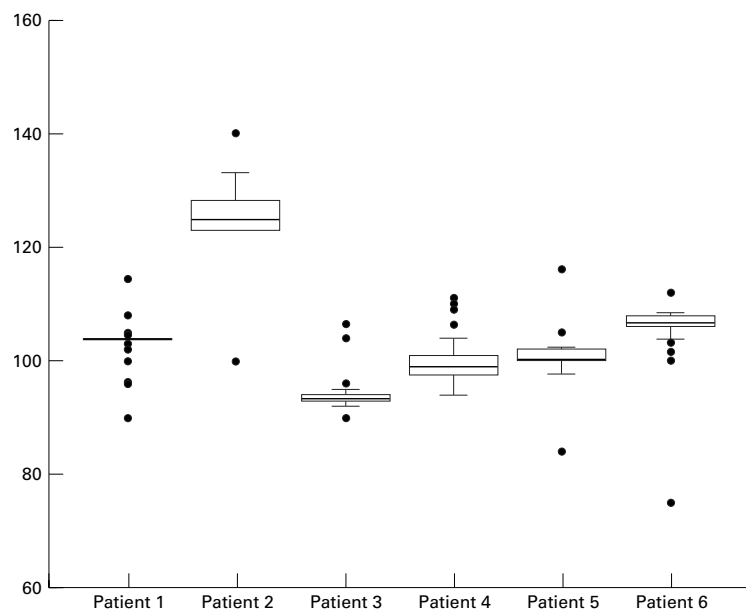


Figure 1 Results of interexaminer reliability of %WFH calculations. Medians are indicated by heavy black lines. Solid dots indicate outliers.

aim of this study was to investigate the reliability of using %WFH as a measure of nutritional status.

Methods

Fifty two members of UK CF Dietitians Interest Group were sent a questionnaire examining the type of measures which they used to assess nutritional status. If they used %WFH they were asked how frequently they did so and by which method.

Each dietitian was asked to complete %WFH calculations based on the following details of six CF patients: date of birth, sex, height, weight, and the date on which the height and weight were taken. Growth charts were provided, as were the US CF Foundation instructions for calculating %WFH:

1. Plot the height on the growth chart and determine height centile.
2. Determine the weight that corresponds to the same point on the centile chart as the height.
3. Divide actual weight by ideal weight, then multiply by 100.

Eleven of 44 dietitians were contacted a month after receiving the first %WFH calculation sheet, and asked to repeat the calculations based on the same data without referring back to their previous calculations.

Means, standard deviations, and ranges of the results obtained for each patient and for each dietitian were calculated.

Results

Forty four of the 52 dietitians completed the questionnaire. The majority (35/44) used %WFH as a measure of nutritional status. Of these, 14 assessed %WFH annually and nine at each clinic visit. Height and weight centile measurements were recorded at each clinic by 41/44. The US CF Foundation method for calculating %WFH was used by 22/35 dietitians and the Cole Slide Rule was used by 9/35.

%WFH calculations were completed by 42/52. The range of estimates for each of the six patients varied by 16.5 to 40 percentage points (mean 27.8; fig 1). On average, 25% of the %WFH calculations were more than two percentage points either side of the mean, and 8.5% were more than five percentage points either side of the mean.

Eleven of the dietitians completed the second set of calculations. The range of estimates for each of the six patients varied by between 13 and 24 percentage points (mean 16.8). For each of the 11 dietitians the average difference between the two sets of results was calculated and the mean of these was 3.4 percentage points (range 0.3 to 8.0).

Discussion

The results indicate that %WFH, when calculated by hand, is not a reliable measure of nutritional status because of the wide inter- and intraexaminer variation. Although this study was conducted with dietitians, many of whom use %WFH regularly, other clinicians also use %WFH to assess nutritional status. There are a number of areas where errors can be made, including the plotting of the patient's current actual weight, height, and ideal weight on the growth charts, and the calculation of %WFH based on this information. In the USA and Canada a computer package designed specifically for the calculation of %WFH is available (Pencharz P, personal communication). Such a package is not available in the UK and most dietitians in this study routinely calculate %WFH by hand. Discussions with dietitians in Europe suggest that the situation is similar outside the UK.

In clinical practice the clinician needs to be aware of the unreliability of this measure when assessing a patient's current nutritional status and change in nutritional status with time. Although clinicians do not normally base their assessment of nutritional status on one measure and monitor a series of measures, including the child's progress on individual centile charts, they should be aware of the problems of using %WFH when calculated by hand. One of the difficulties is in finding an alternative measure which integrates information about a child's height, weight, and age. Body mass index centile measures may be appropriate, but their reproducibility and reliability in children have not yet been established. The Cole Slide Rule was cited as the method of calculating %WFH by 26% of dietitians. At the time of undertaking this research the Cole Slide Rule was based on the Tanner and Whitehouse growth charts which are out of date and are no

longer appropriate for use in children in the UK.⁶ Since completing this research, the Cole Slide Rule has been updated and now calculates body mass index and percentage body mass index for age, using data from the current UK growth charts (Child Growth Foundation, personal communication). We have been unable to identify any published work on the reliability of this slide rule.

In CF research %WFH has been used as a nutritional outcome measure, recorded serially, or to identify a difference in nutritional status between two groups of patients. This study has highlighted the fact that whether %WFH is repeated by the same dietitian, or calculated by a number of dietitians, it is an unreliable measure and should not be used in clinical research. The reliability of any measure proposed as an alternative to %WFH should be assessed using a similar methodology to the one used here.

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