

## Assessment of the Personal Meal Pattern

**Mario Ciampolini\***

*Department of Paediatrics, Universita di Firenze, Italy*

**\*Corresponding Author:** Mario Ciampolini, Department of Paediatrics, Universita di Firenze, Italy.

**Received:** August 11, 2016; **Published:** August 12, 2016

We asked patients to measure blood glucose before meals to protect them from hypoglycaemia and to verify different compliance with instructions. Energy intake decrease might inform equally on compliance but this did not appear as true. Sometimes the patient was reliable in his assertion on accurate distinction of the prescribed hunger after eating suspension from conditioned hunger but energy intake showed no significant pre/post difference. Overweight subjects were capricious, sometimes they engaged in food restriction at recruitment and were incapable of any further decrease after training. In our hands, the measurements by a portable device was reliable.

We measured BG by a portable potentiometer for whole BG measurement with the exokinase method: Glucocard Memory; Menarini diagnostics; Florence, Italy). The adult subject had to personally measure BG with the portable instrument against the autoanalyzer in the lab as he/she did at home. At blood sampling, we supervised the performance of the comparison. The autoanalyzer was checked every morning in comparison with the other 50 laboratories in Tuscany. A difference in BG from the mean had to remain within 1% every day. The heparinized blood sample for the autoanalyzer was immediately centrifuged and measured with the exokinase method. The meantime, the patient performed his/her measurements on the same blood sample by glucometer. The autoanalyzer obtained a mean  $\pm$  SD of  $89.9 \pm 11.3$  mg/dL (N = 85). Subjects measured  $89.0 \pm 12.5$  mg/dL. The mean difference ( $0.9 \pm 7.1$ ) was not significant. On absolute values, the mean difference was:  $5.7 \pm 4.3$  mg/dL with no bias. This error is low compared to the spontaneous BG wavering of 10% every 12 minute. However, I employed portables for measuring preprandial BG only for personal assessments, increase in reliance on sensations and for adjustments in meal energy. In scientific demonstrations [1-6], I used Mean BG, the mean of 21 preprandial measurements reported by 7 d food diaries. This value is much more stable and reliable than single measurements by a portable.

Food diaries with preprandial BG measurements revealed that people have a low confidence interval around the mean BG, 3.8 mg/dL in 120 adults at recruitment. This preprandial BG wavering is minute in comparison with the "normal" BG excursions from 65 to 100 mg/dL. In control adults after five months, the low confidence interval rose to about 5 mg/dL, the preprandial BG is stable through months and years. Preprandial BG is a characteristic of the single meal pattern. An important characteristic, a marker to assess unwanted alterations. Blood pressure, total cholesterol, HDL cholesterol, C reactive protein, HOMA index, GTT, are common examples. Mean preprandial BG is directly associated with insulin resistance. The diary may be accurately performed by the patient under the surveillance of the family physician. The patient can understand directly erroneous meals and may easily apprehend the needed changes. Moreover, he can learn the effects of physical exercise, open air, climate changes and occasional stressful and ill events.

It is a pity that portable measurements have a bad name, i.e., are unreliable. We wanted to know how different was the BG subjective estimation by the patient from the biochemical measurement. In this circumstance, we measured BG by autoanalyzer. This measurement has 1% error and could inform us on small patients' estimation errors.

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**Volume 4 Issue 5 August 2016**

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